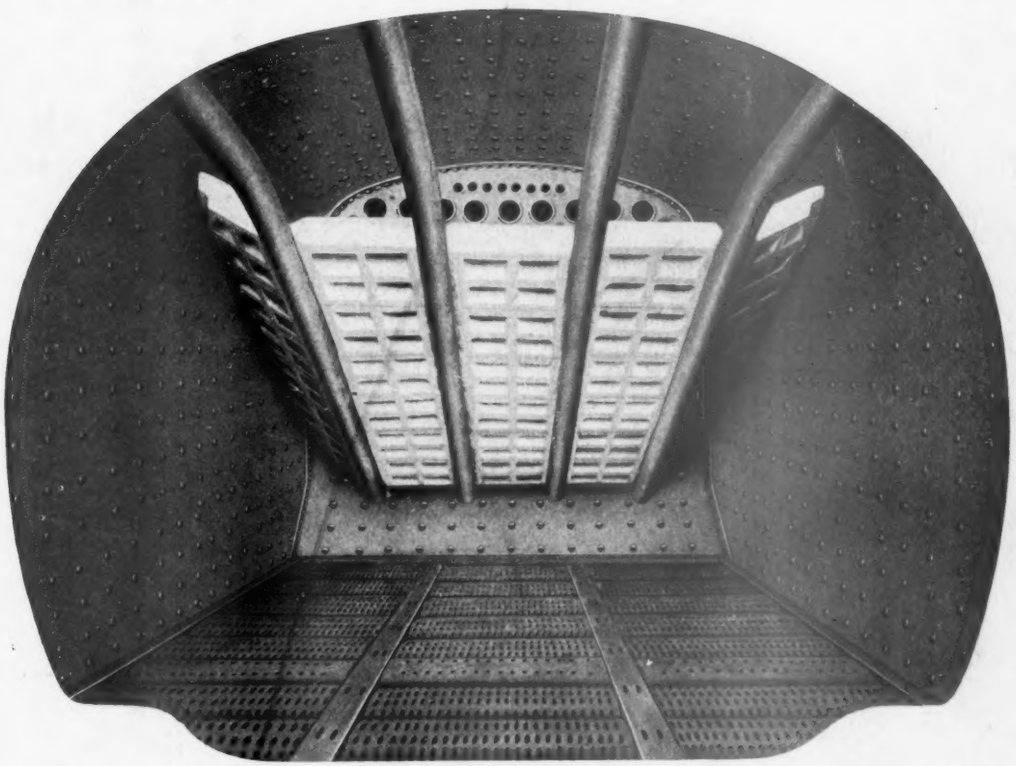
FEB 28 1921

Railway Age

FIRST HALF OF 1921—NO. 8 NEW YORK—FEBRUARY 25, 1921—CHICAGO SIXTY-SIXTH YEAR

Published weekly by Simmons-Boardman Pub. Co., Woolworth Bldg., New York, N. Y. Subscription Price U. S., Canada and Mexico, $8.00; foreign countries (excepting daily editions), $10.00; single copies, 25c. Entered as second-class matter, January 30, 1918, at the post office at New York, N. Y., under the act of March 3, 1879.



Every view through every firedoor of every locomotive coming from the shop should show an Arch.

MORE TONNAGE PER EVERYTHING

More tonnage per locomotive and per crew brings more economical railroad operation.

To get this, each locomotive must be made to yield its utmost in hauling power.

Since it increases locomotive capacity 16%, the Security Sectional Arch should be on every engine you ever intend to use.

Equip them now while revenue earning hours are not sacrificed.

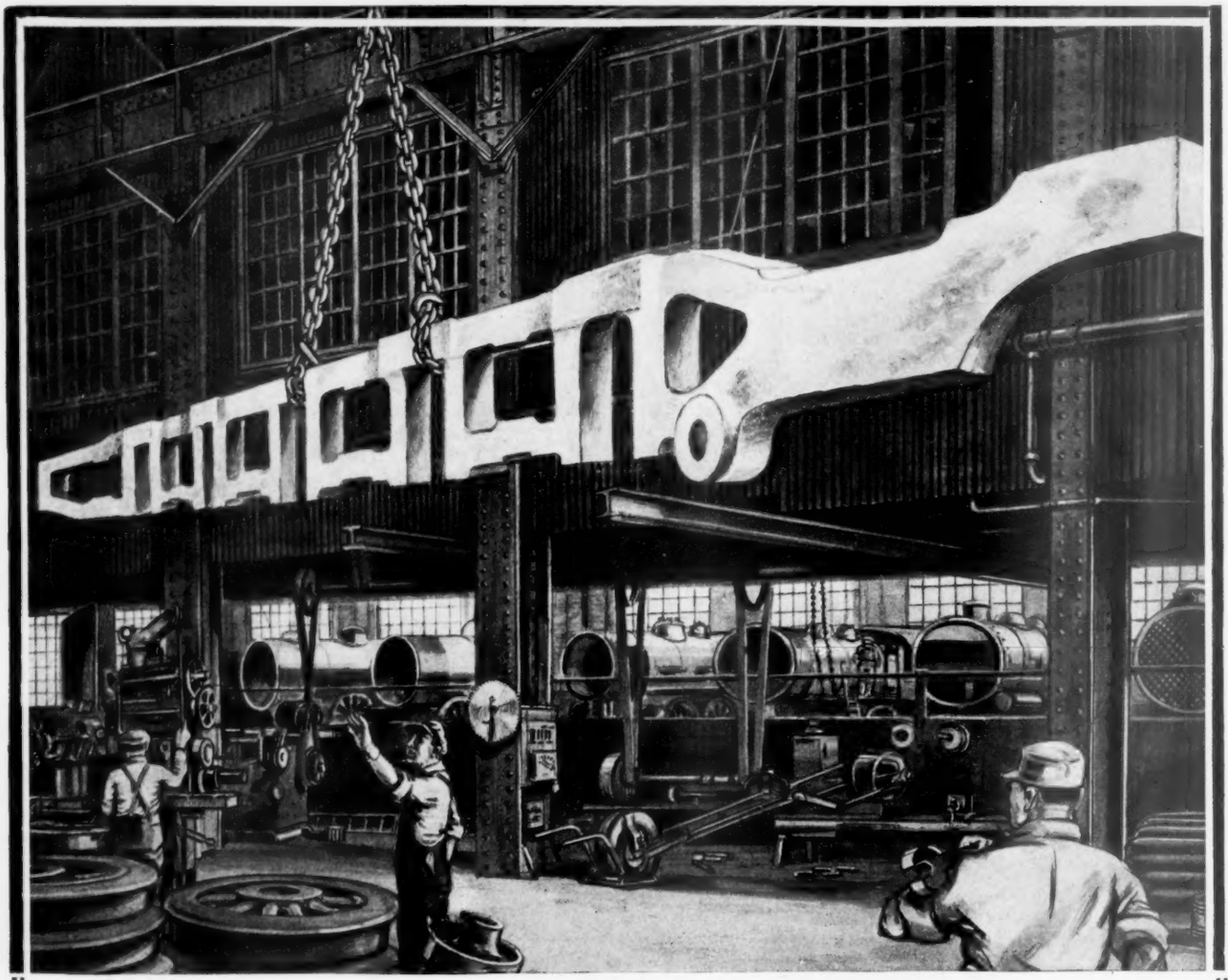
AMERICAN ARCH COMPANY, Inc.

Locomotive Combustion Engineers

McCormick Building
Chicago

30 Church Street
New York

Alphabetical Index to Advertisements, Page 90 Classified Directory of Advertisers, Page 84



"H B" AND "AJAX" IRON CHAINS

ACCO CHAINS—The chains with
reserve strength built into every link

AMERICAN CHAIN COMPANY, Inc.

BRIDGEPORT CONNECTICUT

In Canada: Dominion Chain Co., Ltd., Niagara Falls, Ont.

LARGEST CHAIN MANUFACTURERS IN THE WORLD

General Sales Office: Grand Central Terminal, New York City

DISTRICT SALES OFFICES:

Boston Chicago Philadelphia Pittsburgh Portland, Ore. San Francisco

EDITORIAL

Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

A Problem of Another Character

Only a few months ago operating officers were exerting every effort to move the traffic which was threatening to overwhelm them. Campaigns were being conducted to load more tons per car, to move cars more miles per day and otherwise to increase the amount of freight which could be handled. Within the last three months the traffic has declined so rapidly that operating officers are now hard pressed to readjust their organizations and methods to bring their expenditures within the greatly reduced revenues. This problem has developed with startling rapidity and is of at least equal difficulty in solution. It may be academic to say that these conditions require operating officers to scrutinize every detail of their operation from a new viewpoint to ascertain wherein their methods may be revised to meet these new and changed conditions. The situation is so acute that no officer can afford to overlook any detail which may help in bringing his costs into conformity with his revenues.

Bettering Train Movements By Telephone

Serious delays often occur to freight trains after they have been made up because of poor facilities for the delivery of running orders to the train crew preliminary to their departure. Oftentimes delays are occasioned by the necessity for the conductor's walking some distance for orders and then back to his train. Very often such a delay will upset a despatcher's lineup and cause a number of trains to lose considerable time at meeting points. In order to overcome this condition, one road has installed telephones, connected to the despatcher's circuit, at the outgoing ends of certain busy yards so that when a train is made up and ready to leave the conductor can communicate directly with the despatcher who gives him his running orders. The conductor copies these orders and deposits one copy in a locked box provided for that purpose after the order is completed. Serious delay is avoided and the despatcher has a better opportunity to handle train movements more efficiently. These telephones can be installed at slight expense, and in connection with automatic signals will contribute to more expeditious train movements.

Getting Ready for the Convention

With printed bulletins containing reports of seventeen committees in the hands of the members, the opportunity for a thorough discussion of the committee work at the twenty-second annual convention of the American Railway Engineering Association is assured. Those who attended the meeting last year will recall that many who took part in the discussion confessed a lack of thorough preparation owing to the fact that the bulletins did not reach their hands until just before the convention. This criticism will not apply to the meeting to be held next month since the bulletin containing the first three reports was issued early in December and three others have followed at regular intervals so that all but seven committee reports are now in bulletin form. Owing to the fact that responsibility for a considerable portion of the delay last year can be laid at the door of the printer rather than that of the association, the latter cannot claim full credit for this improvement in the convention preparations although much of it unquestionably has resulted from the efforts of the officers and directors in pressing the work of the various committees. Be that as it may, the prompt appearance of the bulletins should be an important factor in bringing about a successful convention.

South African Electrification Bids

The South African Railways are advertising in this country, through the High Commissioner at London, for bids covering the electrification of two sections of their lines, as is announced elsewhere in this issue. One of the projects involves the line from Capetown to Simonstown. It is understood that this improvement will be primarily to relieve congestion in the suburban district around Capetown. The other section to be improved lies between Durban, on the east coast, and Pietermaritzburg, a short distance in the interior. This second project is said to be for the purpose of securing a more economical operation of freight traffic over heavy grades. Both installations may be regarded, however, as largely experimental. The railway management will have the opportunity to study the results of electrification in the two situations where thus far it has been most generally used, i. e., in suburban service and on heavy grades. If the original installations prove their value there is hardly any doubt that the program will be extended, particularly on some of the heavy grades which are so numerous in South Africa. It is well known that there is a considerable factor of inertia in any market. If buyers begin purchasing from a certain group of manufacturers and the goods they buy are satisfactory, other conditions remaining the same, the market will tend to favor the original source of supply. It is to be hoped, therefore, that American concerns will succeed in securing contracts for at least a satisfactory portion of the materials and equipment for the electrification. The fact that the railways are advertising in this country is a sign that other of our products have already found favor in South Africa. It is to be expected, of course, that a certain prejudice for British goods will be encountered and, too, the factor of exchange may interpose some difficulties. Earnest efforts on the part of our supply manufacturers should, however, be able to counteract these obstacles at least to the extent that some substantial portion of these orders be placed in America.

New York Terminal Development

J. J. Mantell, manager of the New York region of the Erie, in his address on the transportation problem of the metropolitan district of New York, before the New York Railroad Club on February 18, was, to say the least, somewhat unkind to the proposals recently advanced by the New York and New Jersey Port and Harbors Commission. Mr. Mantell was in charge of the railroad terminals in the New York terminal district for the Railroad Administration; he can be regarded,

therefore, as a real authority on conditions at that city. We do not wish in this brief comment to go into the matter of the criticisms made by Mr. Mantell as to the plan of the commission, except to note that he expresses the opinion that the proposals of the commission, or others like them, are impracticable and that the results would not warrant the expense. He suggests what he believes to be a simpler solution in the form of rail-head deliveries on the steamship piers for export freight, and for domestic shipments the use of specially arranged motor truck bodies or detachable containers along somewhat the same lines as used at Cincinnati for interchange l. c. l. freight. The advocacy of the container system by an authority of Mr. Mantell's standing is a thing of no small importance, particularly inasmuch as he proposes it as a solution of a very difficult problem at our most important seaport and commercial center. Further than that, it bears out the conclusion of many other authorities that the idea of using containers of this and similar character has now gone beyond the visionary stage and has proved itself practical and a real element of progress in transportation.

Selection of Foremen

No one can successfully challenge the statement that railroad shop foremen and gang leaders, by their direct contact with the workmen, play an all-important part in securing good shop output. To an employee, his foreman represents the company; the effect of an incompetent, arbitrary, or unfair foreman in lowering the morale of men under his direction is hard to estimate. The business of being a foreman is in reality a profession which cannot be entirely learned in a lifetime. Foremen should be executives and the art of successfully managing men certainly is not less difficult to learn than that of operating machines. For this reason, the common method of selecting foremen from the ranks simply because of ability as master workmen is most unsatisfactory. A capable foreman will not allow himself to become buried in detail work but will assign all possible details to subordinates, spending a large proportion of his time outlining and planning the work of his department. Much thought and study should be given to ways of improving the relations between the workers and the managements. A foreman must be able to control himself and deal both tactfully and firmly with the workers under him, showing absolutely no partiality due to religion, politics or personal preference. It is becoming increasingly evident that to be efficient and handle his job intelligently, a foreman must be a good business man. He must know, or develop means of finding out, the cost of individual operations in his department; otherwise large amounts of money will be wasted in inefficient practices. For example, it often happens that the cost of repairing a certain locomotive part will be greater than the initial cost of a new part. This fact may not be self-evident and unless the foreman is business man enough to find out relative costs, the wasteful practice will continue. In view of the qualities outlined above, it is safe to say that most railroads at the present time do not make the position of foreman attractive enough to interest men of the required caliber.

Propaganda Answered by Service

Several Belgian newspapers have published articles, thought to have been maliciously inspired, which charge that the American locomotives delivered last year to the State Railways are inefficient and that the Ministry of Transportation displayed poor business judgment in purchasing them. An official statement in the Belgian "Chronique des Travaux Publics," a translation of which appears elsewhere in this issue, answers these attacks one by one and gives ample testimony to disprove every criticism offered. Not only are the locomotives from America, says the statement, meeting all requirements, but they are actually giving better service than was expected of them. It is pointed out that the price, $55,250 each, paid in bonds falling due in five years, was not exorbitant. If exchange approaches par at the time of the maturity of these bonds the engines will cost only 280,000 francs, instead of 795,000 as was alleged in the newspaper attacks. Even if the engines cost as much as 800,000 francs eventually, however, queries the statement, was it not at the time necessary that locomotives be obtained as soon as possible regardless of cost? European industry could not supply them, so the Ministry turned to America. The statement gives further details to prove that the American locomotives were satisfactory: The boiler is said to be perfect; the engines haul 1,409 tons with ease up a 0.5 per cent grade at a speed of 25 miles an hour, instead of at only 22 as called for by the contract. It is admitted freely that the locomotives have shown some minor defects, which, however, are easily remedied. It is disappointing to learn that propaganda so malicious on its face should have been launched against the products of American industry. On the other hand, it is extremely gratifying to learn that, as a matter of fact, the American locomotives are giving service which is eminently satisfactory—and this information comes, not by innuendo from questionable sources, but from the Ministry itself, which has the locomotives under constant observation.

Circulars Should Elicit Intelligent Responses

"Think and Act" is the slogan for 1921 on the Minneapolis & St. Louis, as set forth by E. E. Nash, general manager, in a pamphlet issued to employees in January following a conference of officers at Albert Lea in December. This is a commonplace injunction; but the good advice contained in the pamphlet on how to think and how to act, for the promotion of the efficiency of the railroad, is anything but commonplace. In fact, this is one of the best things of the kind that we have seen and some of its paragraphs are quoted in other parts of this paper. It is brief and informal, but brevity and informality constitute one of its virtues. The boy who was challenged to name, if possible, something better than one of his Aunt Mary's pies replied promptly, "two of Aunt Mary's pies." Something of that kind might be said of this pamphlet; or, at any rate, that Mr. Nash has not put in all of the useful matter that he might profitably lay before his subordinates, while the duplication of the *style* of the pamphlet might be a valuable exercise for other managers. But, to drop the pie simile, the thing that would be better than this pamphlet would be the same pamphlet with a supplement containing notes on the "reaction" of the subordinate officers, and the employees, as they read it. The important question with all such brochures for trainmen, enginemen and other operating employees is, how much of the contents will they assimilate? The safety first "catechism" proposed in the *Railway Age* of February 11, page 358, contains valuable suggestions on this point. It is no simple matter to carry out the catechism idea, but the principle is an important one, and experiments in that direction would be well worth while. Asking questions and getting them rightly answered involves enormous work; but it is certain that a large percentage of most circulars of this nature fail of their purpose and that responses (of the kind most commonly seen in railroad circles) are often no better than none at all. American railroad officers have for 75 years been "instructing" their men in calm disregard (most of the time) of one of the fundamentals of pedagogy: namely, that the person taught is not surely in possession of an idea presented by his teacher (if it is at all complicated) until he himself has imparted it to some other person.

Reading and Jersey Central

The plan for the segregation of the coal properties of the Reading Company was filed at Philadelphia on February 14, and since that time the financial experts have been engaging their attention in trying to figure out the value of the stock of no par value which will be issued by the new coal company and a proper quotation for the rights which will be given to the present Reading stockholders. There is, however, another interesting feature of some importance in the segregation plan, and that is the government's attitude as to the divorce of the Reading's control over the Central of New Jersey. As noted in the abstract of the plan given in last week's issue of the *Railway Age,* the proposed plan asks the court to defer the sale of the Jersey Central stock now held by the Reading pending the grouping of the railroads by the Interstate Commerce Commission according to the clause relating to railroad consolidation in the Transportation Act. The government, however, has objected to this because "it means in practical effect a continuance of the status quo indefinitely." The consolidation would take such a long time, it contends, that the effect upon the companies involved in the dissolution plan would be to maintain their present status for an indefinite period. This state of affairs brings out an interesting distinction in the attitude of two branches of the government towards the regulation of railroads. Congress in the Transportation Act has expressed itself as favoring consolidations worked out on a comprehensive and proper basis. The government as represented by the department of justice, however, still seems to adhere to the older idea that consolidations of railroads should be looked upon with distrust and possibly disfavor. Bearing in mind that the Central of New Jersey is to give up its control of the Lehigh & Wilkes-Barre Coal Company, it is difficult to see what harm there can be from the standpoint of the law for the Reading to retain its control in the Jersey Central. In short, it would seem, speaking generally, that the government attorneys, in objecting to the postponement of the sale of the Jersey Central stock by the Reading were showing themselves about a year behind the wishes of the people as represented in the passage by Congress of the Transportation Act.

Standard Tie Specifications Becoming Established

ONE OF THE CONSTRUCTIVE MEASURES introduced by the Railroad Administration which bids fair to be perpetuated is the standard specification for cross ties. When first put into effect these specifications were opposed by many railway men and producers alike. However, as they have become more generally used this opposition has largely disappeared. It is particularly significant that the National Association of Railroad Tie Producers, which includes in its membership the manufacturers of nearly one-half the tie output of the United States, adopted standard specifications practically identical with the Railroad Administration specification, as it has since been revised by the Committee on Ties of the American Railway Engineering Association, for submission to the annual convention of that association next month. Since it is expected that the engineering association, which also comprises the Engineering Division of the American Railroad Association, will adopt these specifications, practical agreement is thus assured.

This action should do much to stabilize the cross tie industry to the benefit of both the producer and consumer. Prior to federal control when each road developed its own specification there was no uniformity in sizes, grades or classifications. The result was that the producers were at the mercy of the railways in times of limited purchases and over-production, while the railways were equally at the mercy of the producers in times of active buying and under-production. With a standard specification which fixes definitely the classification for every tie the only point to be determined is the price and this is a matter for negotiation.

Because the benefits of uniform standard specifications are so evident it is essential that the railway purchasing and engineering officers co-operate with the producers to make these specifications a success. This implies accurate, uniform and impartial inspection, for any specification serves simply as the basis on which inspection and acceptance of materials are to be made. Since any inspection brings into play the question of judgment to a greater or lesser extent, it is of vital importance that the railways recruit and train a corps of inspectors who will interpret and enforce the specifications in the spirit in which they were drawn. Such criticism of the uniform specifications which has been heard up to the present time has been directed almost entirely to inspection. Those in charge of the purchase of ties must therefore give attention to this problem sufficiently to insure that the inspection is reasonable. The cross tie producers and the railways have performed a constructive service in agreeing upon a common specification. It is to be hoped that they will unite their efforts in the further and almost equally important step of developing a uniform inspection of ties produced under these specifications.

Fundamental Issues in Labor Controversy Made Plain

DEVELOPMENTS last week made very clear the fundamental issues between the labor unions and railways in the controversy over national agreements. The unions directly concerned do not include the "Big Four" brotherhoods in train service. They include principally the shop crafts and other unions composing the Railroad Department of the American Federation of Labor. B. M. Jewell, head of the Railroad Department, demanded that the Railroad Labor Board arrange a national conference between the unions he represents and railway executives upon the subject of national agreements. He, Frank P. Walsh and W. Jett Lauck, made detailed arguments for this plan. The Association of Railway Executives met the day after this proposition was made, and adopted resolutions rejecting it and setting forth its reasons for doing so.

1. Collective Bargaining Under the Transportation Act

Messrs. Jewell and Walsh argued for a national conference on the ground that disputes between the railways and their employees regarding wages and working conditions should be settled by "collective bargaining." They claimed that the labor provisions of the Transportation Act contemplate "uniform wages and conditions of employment for railroad workers with the fundamental rights of a living wage and collective bargaining." Explicitly interpreting "collective bargaining" as meaning national collective bargaining "on the basis of organization (i.e., union) recognition," they declared "the Transportation Act of 1920 will be emasculated and rendered abortive" and "this Board will be destroyed insofar as its efficient functioning is concerned" unless the principle of collective bargaining as interpreted by them is accepted by the railways.

The railway executives rejected their plan upon the ground that "under normal conditions the adjustment of rules and working conditions and of basic wages cannot successfully be made the subject of national conferences and negotiations," because "this would result in requiring all railroads to operate under rigid and uniform rules and

working conditions, and under rigid and uniform wages," which would prevent economical and efficient operation.

It is difficult to see how anybody who has read the labor provisions of the Transportation Act, and who is not trying to mislead, can contend that they contemplate merely *national* collective bargaining on the basis of "organization recognition." Section 302 expressly provides that "railroad boards of labor adjustment may be established by agreement between *any carrier, group of carriers* or the carriers as a whole, *and any employees* or subordinate officials of carriers, or organization or group of organizations thereof." Section 307 says that the Labor Board may hear any dispute that is likely substantially to interrupt commerce "upon a written petition signed by *one hundred unorganized employees*," as well as upon the application of any carrier or group of carriers, or any organization or organizations of employees. It is doubtless true that these conditions contemplate collective bargaining; but it is plain that they contemplate such bargaining either by a single railway and its own employees, whether organized or unorganized, or by a group of railways and their employees, or by all the railways and their employees. If the law contemplated negotiations solely between railways and labor unions it certainly would not have provided that a dispute could be brought before the board by one hundred or more "unorganized" employees.

From a legal standpoint the unions have just as good a legal basis for contending for national negotiations as the railways have for contending for negotiations between each railway and its own employees—and no better.

Furthermore, the law clearly does not contemplate "uniform wages and conditions of employment." It authorizes agreements upon wages and working conditions by railways and their employees either locally, regionally or nationally. If railways and their employees in different parts of the country agreed to different wages and working conditions, the agreements would be perfectly legal, but then wages and working conditions would not be uniform.

The Labor Board itself, in fixing wages, is required to take into consideration, among other relevant circumstances, "the scales of wages paid for similar kinds of work in other industries" and "the relation between wages and the cost of living." Suppose the Board should find that in one part of the country the wages paid in other industries and the cost of living were lower than in another part of the country. It would then be bound by the law to make lower railway wages in the former part of the country than in the latter, in which case the wages fixed by the board itself would not be uniform.

2. The Real Objects of the Labor Leaders

Since Mr. Jewell and Mr. Walsh, in arguing for exclusively national conferences and absolutely uniform wages and working conditions, have not, from a legal standpoint, a leg to stand on, it is evident they are seeking ends other than that of scrupulous compliance with the letter and spirit of the law. What are these ends? They show beyond question what one of them is when they attempt to read into the law "uniform wages and conditions of employment." They show what another of them is when they constantly reiterate that by seeking abrogation of the present national agreements, with their uniform rules and working conditions, the railways are trying to break down the labor unions. Naturally the national leaders of these unions want to make the national unions as powerful as possible. This makes the national leaders as powerful as possible. The more power the national labor leaders have concentrated in their own hands the more dangerous they can make it for the railways and the public to refuse to comply with their demands, however unreasonable. The more power they have the more they can do to promote the Plumb plan of employees' operation of the railways, which is their ultimate goal.

The railways are opposed to exclusively national negotiations for precisely the same reasons the leaders of the labor unions want them. They know that in national conferences the union leaders would fight to the last ditch for uniform wages and working conditions throughout the country—that it is for the very purpose of perpetuating these things that the labor leaders insist upon national conferences. The railway executives believe that only by conferences and agreements between the various railways and their own employees can wages and working conditions be adjusted to local conditions and to the views of the individual managements and their own employees as to what is reasonable and just. They believe that uniform wages and working conditions throughout the country unavoidably result in great inefficiency and waste.

As the Association of Railway Executives said in the resolutions adopted by it, "one of the great advantages of private over government ownership and operation of railroads lies in the greater adaptability (under private operation) of individual railroads to the geographical, social, economic and operating conditions which vary greatly with different portions of the country," and "restoration and maintenance of this variation is essential to private operation and to its ability to furnish efficient and economical transportation at the lowest possible rates."

Since the leaders of the labor unions, in their arguments before the Labor Board, explicitly contended for "uniform wages and conditions of employment," it is not necesary to prove that in a national conference they would stand fast for these things. And since these things in this country, with its varying conditions, always have been and are now incompatible with economical and efficient railway operation, the position taken by the labor leaders upon this subject affords one of the best possible arguments against exclusively national conferences. In addition, however, the railway executives feel sure that in national conferences the labor leaders would go the limit to perpetuate rules and working conditions which are unreasonable, not merely because they apply throughout the country, but in themselves.

The labor leaders recently have said that they would not insist upon unreasonable rules and working conditions which prevent efficient and economical operation, thereby implying that they would give up in national conferences any unreasonable rules and working conditions now in effect. The railway executives take no stock in this talk because they know, first, that the very labor leaders who talk thus now are the same men who got these national agreements, with their unreasonable rules and working conditions, established by the Railroad Administration, and, second, that they are the same men who, from the time the railways were returned to private operation, have demanded that these arrangements be perpetuated.

They got piecework abolished in all railroad shops under government control, although almost every experienced railway officer consulted by the director-general opposed this step. They got those reclassifications of employees, which have resulted in many cases in four to six men being required to do the same work that formerly was done by one or two. They got established the rule requiring employees who check in and out on their own time to be paid every week for an hour's work they do not do. They got established the rule which requires many thousands of employees to be paid for the time they use in eating their lunch. It has been asserted that there is not an unreasonable rule in these national agreements which was not previously in the schedule of one or more railways. But did the fact that one or more railways, probably under coercion, agree to an unreasonable rule make it reasonable for the labor leaders to secure the application of that same rule throughout the United States?

3. Record and Attitude of Labor Leaders Show What They Want

These labor leaders have a past record, and are now taking a position, which makes perfectly clear why they do not want local conferences and agreements, and do want national conferences and agreements. They want national conferences and agreements because they want to perpetuate uniform wages, uniform working conditions, the prohibition of piecework, and other unreasonable and indefensible concessions they got under government control. But these things cannot be perpetuated under private operation without largely defeating the purpose for which Congress and the public returned the railways to private operation—that is, more economical and efficient operation.

Insofar as the principles and methods of government operation are perpetuated, the results of government operation necessarily will be perpetuated. The railway executives are trying to restore efficiency and economy under private operation, and they refuse to agree to settle the question of rules and working conditions by national conferences because they believe that the wrong and harmful principles and methods of government control can be got rid of only by the managements and the employees of each railway dealing directly with each other.

The fundamental issue is plain and unescapable. The labor leaders and the railway executives have joined in making it plain. It is whether rules and working conditions shall be determined by methods primarily intended to consolidate and increase the power of the labor unions, or by methods primarily intended to increase the efficiency and economy of railway operation.

The Silver Lining of the Railway Cloud

THE CLOUD HANGING OVER the railroad industry at the present time is very dark and angry looking. The tremendous decline of business since October and the high operating costs, if continued, would result in many railways being bankrupted. But the cloud has a silver lining.

In the three months of September, October and November, 1920, the railways moved the largest freight business they ever handled in those months. The business in September and October was especially heavy. In these months, however, the railways as a whole, and those of each of the three large territories, failed to earn the six per cent return it was expected they would earn under the new freight and passenger rates. They earned only about two-thirds of it.

The experience of those three months was enough to convince every student of railway operating and financial matters that if the costs of fuel, materials and labor then prevailing were not reduced the railways would be unable to earn their six per cent return, or anywhere near it. If, however, the business had continued to be heavy, the difficulties in the way of reducing the unit costs of operation and the total operating expenses in the near future would have been almost insuperable. The public would never have agreed to a further advance in rates. It is impossible to see how, in these circumstances, the railways ever could have been put on a prosperous basis.

The great slump in business came, however. Railway operating officers, who for months had been obliged to devote their attention almost exclusively to getting the traffic moved, became able to devote much more time to the study of economies. Prices of fuel, which is one of the largest items of railway expenses, began to yield. Coal is now being charged into operating expenses at the high prices for which it was contracted in the past, but when new coal contracts are made it undoubtedly will be possible to get substantially lower prices. The depression in business is causing reductions in wages and in prices by manufacturers of railway materials and supplies. These reductions are not great, but in due time they will be reflected in reductions of operating costs.

The most recent statistics show that last August the number of railway employees had increased to the unprecedented figure of more than 2,200,000. This increase in employees was largely due to the fact that with the demand for labor in all industries greatly exceeding the supply, and with the railway managements bound hand and foot by all kinds of restrictive rules and working conditions, it was impossible to get efficient work from many classes of railway employees. The payroll was running at the unprecedented annual rate, according to the latest statistics, of more than $3,800,000,000 a year. As long as business continued heavy it was practically impossible to reduce labor costs. Since September 1, the railways have laid off fully 300,000 men. The decline in the cost of living and in the wages of labor in other industries, and the tremendous decline of traffic and earnings, have enabled them to bring far more forcibly and effectively to the attention of the Railroad Labor Board and the public the necessity for reducing labor costs. Prospects for a substantial reduction in the near future in the wages of unskilled labor are good. Apparently, also, the prospects of securing relief from the iniquitous and burdensome national agreements, rules and working conditions are much better than they would have been if the present situation had not developed.

In consequence of all these things there seems to be good reason for believing that the operating expenses of the railways, and especially their unit costs of operation, will be reduced far more than they could or would have been if the present crisis had not come. If this should be the case, when traffic revives, as in time it is sure to revive, the railways will be able to handle it with lower expenses than they had last summer and fall when the business was heavy. This would mean larger net earnings obtained, not through advances in rates, but through reductions of expenses, and what the railways need is not merely larger net earnings, but that these larger net earnings shall be gained through reductions in expenses. When the railways begin to make larger net earnings, and only when they begin to do so, will they be able to enter upon a program of enlarging their facilities.

It will be recalled that Dickens' famous character, Mark Tapley, was always happiest when things seemed to be going worst, and was reduced to profound depression when everything apparently was going well. The *Railway Age* has no desire to acquire the reputation of the Mark Tapley of the railway business. It is plain that if the traffic of the railways should continue to be so abnormally small as now, and their unit costs of fuel, materials and labor so abnormally high, the result would be disaster. The reason why present conditions give cause for optimism is that apparently these very conditions are going to bring about the permanent reductions of expenses which it has been plain for months were essential to putting the railroads on a sound basis.

The industry never was on a more precarious basis than that disclosed by the statistics of earnings and expenses in September, October and November, showing that with the largest business ever known and the highest rates known for many years the railways were unable to earn anything approaching a reasonable return. The reason why present conditions probably will prove a blessing in disguise is that they probably will make possible the beginning of reductions in expenses which in the long run will make possible the earning of reasonable net returns under the present rates, or even under lower rates.

Letters to the Editor

The Stop and Proceed Rule

HERINGTON, Kansas.

TO THE EDITOR:

In your issue of January 21 reference is made to a proposed change in the stop and proceed rule so as to permit a train to pass an automatic block signal at stop without stopping, under certain conditions.

It would be a mistake to give a stop indication a multiplicity of meanings. It seems to me extremely difficult to justify a line of thought that would permit a train to pass an automatic block signal at stop without stopping. These signals perform the same function that a burning red fuse or the explosion of one torpedo performs on non-automatic block territory. The responsible manager could well hesitate a long time before authorizing a train on single track to pass any of these signals without stopping.

If a change is necessary in certain places or on certain railroads, it would be preferable to change the indication of the signal so that it would give a caution indication instead of a stop indication.

E. H. HEATH.

[Mr. Heath agrees, evidently, with the majority. The majority do, indeed, hesitate long before relaxing the stop rule on single track. Our former correspondent would in all probability hesitate in like manner; but, while hesitating as regards single track, he might try the experiment on double track. Practically, a reduction to five miles an hour is as good as a stop; the question is whether enginemen could be trained to obey a five-miles-an-hour rule as well as they obey a stop rule. The distant-signal rule which we referred to says, in effect, "If you shut off steam you may pass the signal;" the essence of the requirement being that (1) if the engineman does something to indicate that he is alert, (2) has evidence that it is safe to keep moving and (3) is moving at a speed moderate enough to give him ample time to consider his action calmly and without hurry, he may save the delay and cost of a stop.—EDITOR.]

The Importance of Intelligent Inspection

ERIE, PA.

TO THE EDITOR:

On every side one hears a consistent and persistent denunciation of wasteful manufacturing methods as they concern both labor and material. There is one very prolific source of waste, however, that is rarely touched upon. When a manufacturer contracts to make a number of articles for a customer, the customer often insists on having his inspector resident in the manufacturer's shop to watch the progress of the work, and to pass on its acceptability, according to the terms of the contract. This is especially true of government and railway contracts.

Some of these inspectors are men of exceptional ability and intelligence, who try in a broad, common-sense, business-like way to protect their employers' interests without working any hardship or injustice to the manufacturer producing the articles contracted for, and who give and take in their decisions, considering always the impossibility of perfection, and appreciating the relative importance of details. Such men are important factors in industrial progress, and in the distribution of rewards they should not be overlooked.

There is another class of inspectors, however, who are narrow in their vision, arbitrary in their decisions, and arrogant in their conduct. Because of the authority invested in them for the time, these men become self-centered, and without any thought or consideration of the general welfare, take advantage of every slightest pretext to reject this or that article at various stages of its completion. This is done regardless of the value of the labor and material involved—which become a dead loss to the manufacturer and to industry in general, without benefiting the purchasers in any degree whatever.

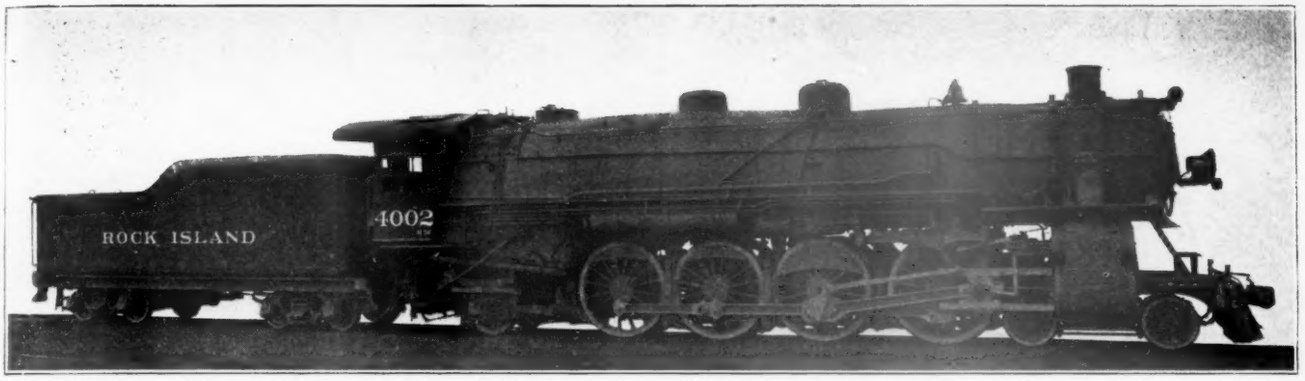
Inspectors of this type are far too numerous, and are a distinct detriment and hindrance to industrial progress. They not only strike terror to the hearts of the members of an organization so unfortunate as to have one thrust upon them, but they are directly responsible for immeasurable wastage which directly affects the cost of manufactured articles. They are a real menace, and every legitimate effort possible should be made for their elimination. Oftentimes the employers of such men are directly and avowedly responsible for their conduct, by placing strict limitations on the exercise of their sense of judgment, and insisting on a rigid observance and enforcement of the letter of contracts, ignoring that spirit of fairness so essential to the equitable fulfillment of any contract.

When an unjust inspector imposes unwarranted hardships on a manufacturing organization, the old law of self preservation gets into action, and inspires reprisals that often result in covering up errors and defects that would otherwise have been called to the inspector's attention and remedied. It also results in straining, perhaps to the breaking point, business relationships that had hitherto been most cordial and mutually profitable.

The gravity of this condition makes its correction imperative. Inspectors should be chosen with great care. Wherever possible they should be good mechanics, of an amiable disposition and natural good judgment, who have had sufficient training in the technique of the particular phase of manufacture in which they are interested. They should be given as wide discretionary powers as the exigencies of the work in hand requires. Their reports to their employers should cover the number of rejections, as well as the accepted articles, and when these rejections are greater than seems reasonable, the matter should be taken up with the manufacturer. He, being on the defensive, will undoubtedly reveal any unfairness or injustice to which he may be subjected by the inspector, and which, for fear of unpleasant and embarrassing contractual conditions which might arise, he would otherwise keep to himself.

G. GRIEG.

ACCORDING TO ESTIMATES prepared under the supervision of Ernest F. Buchard of the United States Geological Survey, 1920 was a record year in the production, shipment and gross value of Portland cement. The production is estimated at 100,302,000 bbl. and the shipments at 96,329,000 bbl., valued at $193,548,000, compared with 80,769,378 bbl. manufactured and 85,596,616 bbl., valued at $146,656,076, shipped in 1919, an increase of 24 per cent in production, 13 per cent in shipments, and 31.9 per cent in value of shipments in 1920. The stocks of finished cement increased from 5,852,497 bbl. at the end of 1919 to about 8,290,000 bbl. at the end of 1920, or more than 41 per cent. The average mill price in bulk at the mills for the whole country was $2.01 a barrel in 1920, compared with $1.71 in 1919, an increase of 17.5 per cent. The lowest average price reported by any group of plants in 1920 was $1.77 a barrel in the Illinois-western Indiana district, and the highest average price was $2.47 in Washington. These prices compare with $1.62 and $2.05 in 1919 in the same localities. There were 115 plants manufacturing Portland cement in 1920, compared with 111 active plants in 1919, one additional plant each having been operated in Alabama, Indiana, New York and Oregon.



Mountain Type Features New Rock Island Power

Greater Steaming Capacity and Larger Driving Wheels Indicate Trend in Development of This Type

UPON RETURN to private management, the Chicago, Rock Island & Pacific was one of the earliest to place large locomotive orders. These orders included 10 Mountain, 10 Mikado and 15 Santa Fe type locomotives all of which were purchased from the American Locomotive Company and constructed at their Dunkirk plant. None of these types is new to the Rock Island since this road has operated both Mikado and Santa Fe type locomotives of the same general design in freight service for several years and was one of the first railroads to adopt Mountain type locomotives for heavy passenger service.

The selection of these locomotives by a railroad that has had experience with each type is in itself significant and would indicate that the Mikado has made a place for itself which the advent of heavier power cannot usurp. It also serves to demonstrate that the Santa Fe type is here to stay and verifies the foresight of those who placed the Mountain type in passenger service on the Rock Island system seven years ago.

When the first Mountain type locomotives were placed in service on the Chicago, Rock Island & Pacific, they enabled the consolidation of the St. Louis and the Chicago sections of the Colorado trains into one train west of Phillipsburg, Kansas, where maximum and ruling grades of 1.0 per cent are encountered. The trains hauled by these locomotives usually consisted of 10 or 11 all-steel cars weighing from 675 to 750 tons although as high as 1,175 tons in 19 cars have been handled successfully over a division of 140 miles. Subsequent tests which demonstrated the high capacity of these first Mountain type locomotives were described in the April 16, 1915, issue of the *Railway Age Gazette,* page 829.

Pioneer and New Mountain Types Compared

The policy of the Chicago, Rock Island & Pacific with respect to the design and equipment of new locomotives has been consistently directed toward obtaining maximum efficiency in operation and economy in maintenance. Therefore, a comparison between the pioneer and the new Mountain type locomotives affords an interesting commentary upon the development of this type practically since its initiation in passenger service.

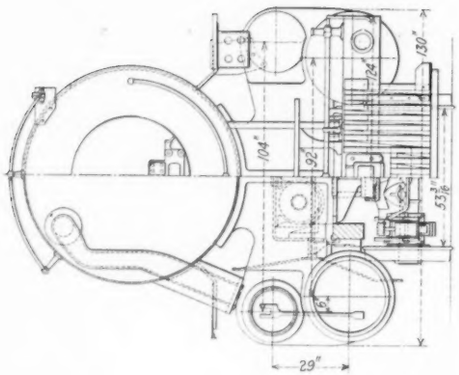
It will be observed from the specifications which are submitted in connection with this article that the rated tractive effort of both locomotives is nearly identical, but that the weight of the new locomotives is considerably greater than that of the original Mountain type. The new locomotives weigh 29,000 lb. more on the drivers and are proportionately heavier throughout.

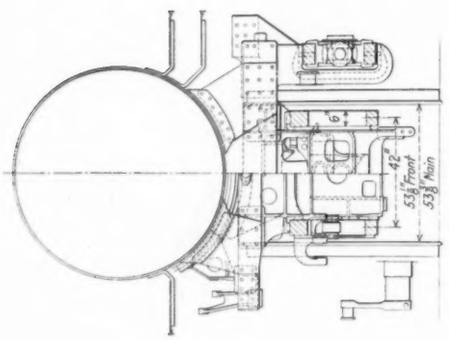
This increased weight is largely accounted for in the boiler dimensions as the total heating surface of the new locomotives, excluding the superheater, is nearly 600 sq. ft. greater. The greatest proportional increase occurs in the firebox heating surface of the new locomotives which is over 30 per cent greater than the firebox heating surface of the older locomotives. This increase is largely accounted for by the application of three thermic syphons to each locomotive as the other firebox dimensions, including the grate area, are practically the same.

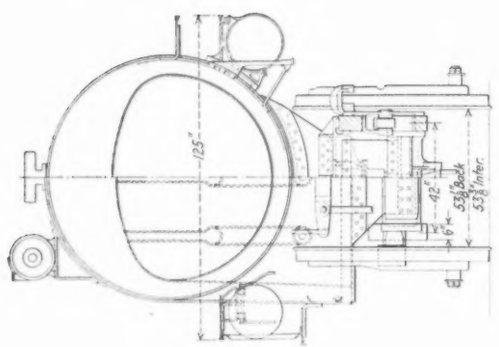
The most striking difference in design, however, appears in the driving wheel dimensions, the new locomotives having 74 in. driving wheels as compared with the 69 in. wheels of the earlier locomotives. As the cylinder dimensions of the two locomotives are the same, it will be seen that the larger driving wheels tend to balance the larger boiler, which carries 200 lb. pressure as compared with 185 lb. on the original locomotives. These are the first Mountain type locomotives built with driving wheels as large as 74 in. and their ability to sustain high speeds with heavy trains will be watched with interest. It is to be hoped that the Rock Island will test these locomotives in the same thorough manner that the original Mounain types were tested so that comparative results will be available, as the development of a new type depends much upon such tests.

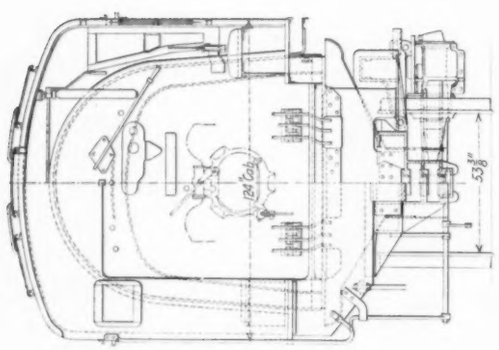
Special Features of the New Locomotives

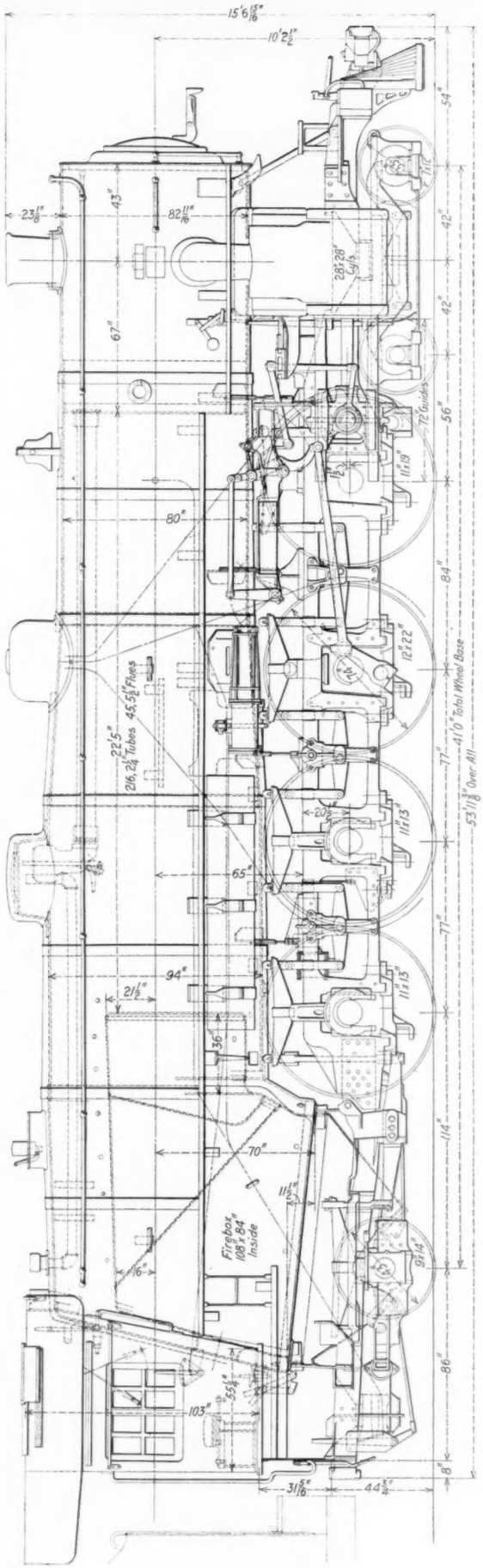
Among the novel characteristics applying generally to all three classes of the new locomotives is the short slope of the cab front which permits all of the wrapper sheet staybolts to be outside of the cab so as to facilitate inspection and removal. All the piping is arranged so as to interfere as little as possible with inspection and minor repairs to staybolts. The location of cab appurtenances was given special attention in the design of these locomotives from the standpoint of both safety and accessibility. An outside steam turret is provided with extension handles to the valves so that all pipes having boiler pressure are located outside of the cab. The injectors also are located outside of the cab. The detached water column is specified in accordance with the recommendations of the mechanical standards committee of the Railroad Administration. This arrangement was proposed as a result of the exhaustive tests conducted by the Bureau of Locomotive Inspection of the Interstate Commerce Commis-











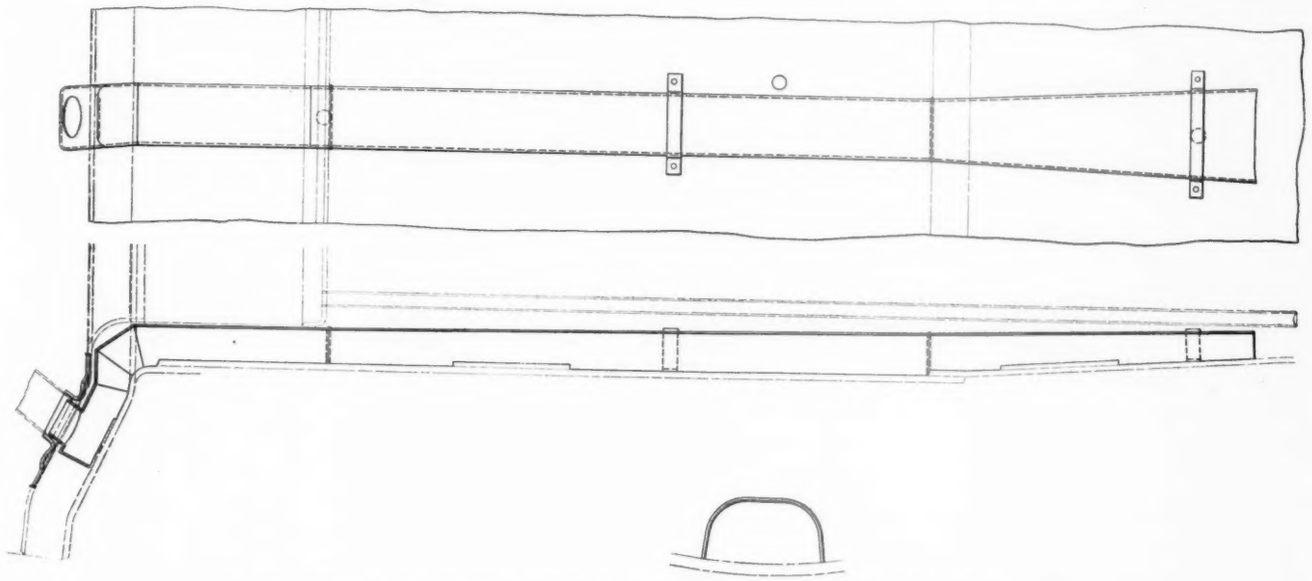
Elevation and Sectional Views of New Mountain Type Locomotive for Chicago, Rock Island and Pacific

sion which determined the advantage of mounting the gage cocks and gage glass upon a column so mounted as not to be influenced by the flow of water against the back head of the boiler.

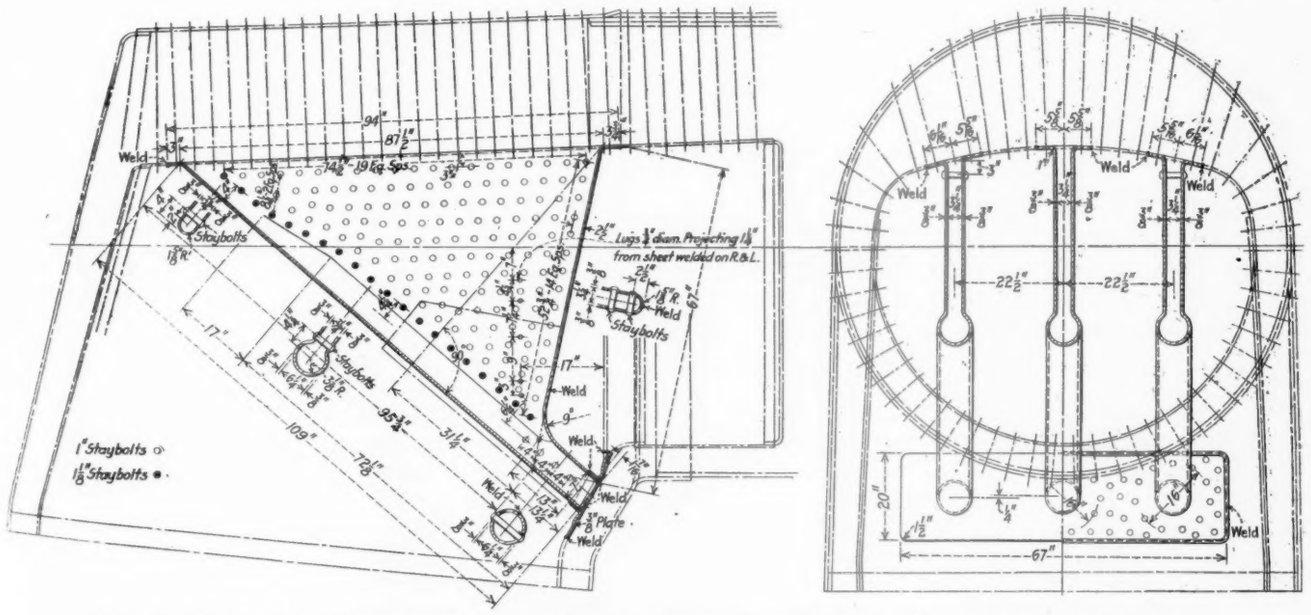
The tenders of these locomotives are of the Franklin type with unit draw-bar attachments and Commonwealth cast steel underframes. This is in distinction to the Vanderbilt type of tender which was constructed for the first Mountain type locomotives and has characterized the Rock Island locomotives for many years. It should be noted in this connection that the new tenders for the Mountain type locomotives have a water capacity of 10,000 gal. and carry 16 tons of coal in comparison to the tenders attached to the original Mountain type locomotives which had a maximum capacity of 8,500 gal. of water and 14 tons of coal. The locomotive tender has a low center of gravity with rounded bottom and corners bringing the side and bottom sheet connection above the radius so as to eliminate the customary angle in the corners of the cistern to which the side and bottom sheet are attached and which usually give a great deal of trouble on account of leakage.

We are indebted to W. J. Tollerton, general mechanical superintendent, for the following statement relating broadly to the principles governing the design of these locomotives:

"Many of the features on these locomotives were brought about by closely watching previous engines of similar design, and the idea has been to eliminate any weakness that may have developed; also the design is prepared with a view to the greatest possible reduction of possible future shop labor when the engine is overhauled, by easy accessibility of the different parts, and the idea of making each part, if possible, run from shopping to shopping without renewal. It must be appreciated now, more than ever, that anything that can possibly be done to increase mileage and get a quicker turn



Intake Channels for the Thermic Syphons Applied to New Rock Island Locomotives



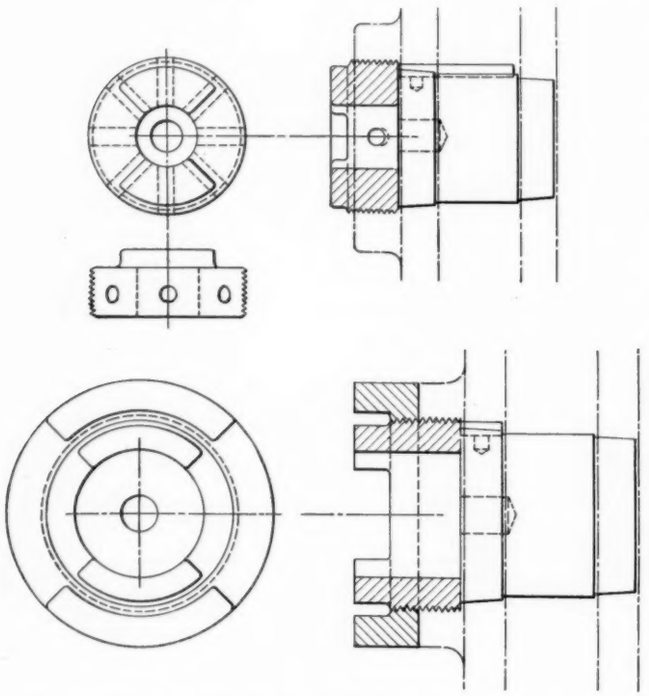
Detailed View of the Nicholson Thermic Syphons as Applied to Rock Island Mountain Type Locomotives

on the engine, both at the terminal and when passing through shop, should be anticipated at the time the design is made."

Special Equipment Applied to the New Locomotives

The most noteworthy addition to these new locomotives in the form of a specialty designed to increase economy and capacity is the Nicholson thermic syphon, the details of which are illustrated in connection with this article. While this device has been applied to locomotives on the Rock Island for over a year and is now giving satisfactory service on a number of other railroads, this is the first instance in which the syphons have been specified throughout on new orders of Mountain, Mikado and Santa Fe type locomotives. As will be observed from the specifications and drawings, the syphons add 141 sq. ft. of heating surface to the firebox and serve to support a brick arch in place of arch tubes. The purpose of the syphons is to increase the capacity of the locomotive by increasing the firebox heating surface as noted and to improve the circulation within the boiler resulting in a freer steaming and more economical locomotive.

Two other novel and interesting specialties applied to these locomotives are the wrist and knuckle pins. These designs are patented by the U. S. Metallic Packing Company and have the advantage of enabling the pins to be removed



Removable Knuckle Pins Applied to New Rock Island Locomotives

from the outside and the rods taken down irrespective of their position.

The new locomotives are all equipped with force feed lubricators, Barco flexible steam heat and air brake connections, Alco power reverse gears, Baker valve gear, the Woodward engine truck, oscillating front driving box, Franklin adjustable driving box shoes and wedges, hollow main crank pins with internal grease lubrication and adjustable hub plates by means of which the lateral can be taken up without dropping the wheels.

The locomotive smoke-box is equipped with the Unit spark arrester which is cylindrical in form and can be readily removed through the front door. Franklin grate shakers are applied to all of the locomotives but stokers of the Duplex type are applied only to the Santa Fe type locomotives as it has been found entirely practical to meet the maximum service requirements on Mountain and Mikado type locomotives by means of hand firing and it was thought that the application of syphons would further improve the free steaming qualities of these locomotives. However, the Mountain type locomotives are designed so that stokers may subsequently be applied if found necessary.

In addition to the Alco standard drifting valve these locomotives are equipped with an auxiliary saturated steam line to the cylinder. A manually operated quick opening 1¼ in. starting valve is connected to a 1¼ in. pipe extending from the turret to the front end of the boiler. From this point, 1 in. branch pipes lead into each steam pipe. A copper pipe, having its own connection from the hydrostatic lubricator in the cab, is led to this steam line. A 1¼ in. tee is also inserted near the cab for emergency oiling of the piston valves by the engineman in case the force feed oil pump fails en route.

Mountain Type Locomotive Dimensions

The Mikado locomotives purchased by the Rock Island last year do not differ materially in design from locomotives of the same type which have been in service on the railroad for some years and the new Santa Fe type locomotives are substantially the same in design as the locomotives of this type built for this railroad in 1918 and described in the December 6, 1918, issue of the *Railway Age*, page 993.

The Mountain type locomotives which were constructed for the Rock Island in 1913 and referred to in the foregoing were described fully in the January 9, 1914, issue of the *Railway Age Gazette*, page 86, but for convenience the principal dimensions of these locomotives are tabulated together with the dimensions of the new locomotives as follows:

	Chicago, Rock Island and Pacific Mountain Type Locomotives	
	Built in 1913	Built in 1920
General Data		
Tractive effort	50,000 lb.	50,400 lb.
Cylinders, diameter and stroke	28 in. by 28 in.	28 in. by 28 in.
Weight in working order	333,100 lb.	369,000 lb.
Weight on drivers	224,100 lb.	253,000 lb.
Weight on leading truck	57,500 lb.	57,000 lb.
Weight on trailing truck	51,500 lb.	59,000 lb.
Weight of engine and tender in working order	490,500 lb.	559,000 lb.
Wheel base, driving	18 ft. 0 in.	19 ft. 10 in.
Wheel base, total	38 ft. 11 in.	41 ft. 0 in.
Wheel base, engine and tender	70 ft. 2¼ in.	79 ft. ¾ in.
Ratios		
Weight on drivers ÷ tractive effort	4.48	5.02
Total heating surface ÷ grate area	6.66	7.32
Total heating surface ÷ grate area	65.4	74.4
Per cent firebox heating surface to evaporative surface	7.58	8.66
Per cent superheating surface to evaporative surface	22.9	26.6
Total evaporative surface ÷ volume of cylinders	206	234
Grate area ÷ volume of cylinders	3.14	3.15
Wheels		
Driving, diameter over tires	69 in.	74 in.
Driving, thickness of tires	3½ in.	4 in.
Driving journals, main, diameter and length	11 in. by 22 in.	12 in. by 22 in.
Driving journals, others, diameter and length	11 in. by 13 in.	11 in. by 13 in.
Engine truck wheels, diameter	34 in.	33 in.
Engine truck journals, diameter and length	7 in. by 12 in.	7 in. by 12 in.
Trailing truck wheels, diameter	42 in.	43 in.
Trailing truck journals, diameter and length	9 in. by 14 in.	9 in. by 14 in.
Boiler		
Style	Conical.	Conical.
Working pressure, pounds per sq. in.	185 lb.	200 lb.
Outside diameter, first ring	78 in.	80 in.
Firebox, length and width	107½ in. by 84 in.	108 in. by 84 in.
Tubes, number and outside diameter	207—2¾ in.	216—2½ in.
Flues, number and outside diameter	36—5½ in.	45-5½ in.
Tubes and flues, length	22 ft.	22 ft. 5 in.
Heating surface, tubes and flues	3,805 sq. in.	4,283 sq. ft.
Heating surface, firebox	312 sq. ft.	406 sq. ft.
Heating surface, total	4,117 sq. in.	4,689 sq. ft.
Superheating surface	944 sq. ft.	1,247 sq. ft.
Grate area	62.7 sq. ft.	63 sq. ft.
Tender		
Tank	Cylindrical.	Rectangular.
Water capacity	8,500 gal.	10,000 gal.
Coal capacity	14 tons	16 tons

Executives Outline Future Labor Policy

Employees' Plea for Joint National Conferences on Rules and Working Conditions Rejected

DEVELOPMENTS in the several controversies over wages and working conditions during the past week have been confined largely to the results of a meeting of the Association of Railway Executives at the Drake Hotel, Chicago, on February 18 at which time the attitude of the carriers in regard to proposals previously made before the Railroad Labor Board by representatives of the employees was clearly defined. Similarly the carriers' attitude toward the whole labor problem was definitely outlined.

The progress of the hearings before the Labor Board on the employees' demand for the perpetuation of the national agreements formed during federal control has been outlined in the previous issues of the *Railway Age* up to and including the hearing on February 17 when B. M. Jewell, vice-president of the Railway Employees' Department of the American Federation of Labor and chief spokesman for the employees, requested the Board to either recognize his interpretation of the principle of collective bargaining or grant a recess until March 14 in which he could prepare a reply to the presentation which has been made in this case on behalf of the carriers. Mr. Jewell was followed on the stand by Frank P. Walsh who said in part:

Statement by Frank P. Walsh

We submit that the Transportation Act contemplated three things:

1. Efficient and economical service to the public;

2. Uniform wages and conditions of employment for railroad workers with the fundamental rights of the living wage and collective bargaining;

3. A guarantee to the owners of the railroads of a fair return on their investment.

It was not an Act primarily and essentially for the relief of the railroads or their owners. No one of the three purposes of the act shall take precedence over the others; none of the three parties in interest shall receive greater consideration than the others. Accordingly we believe that the time has come to sound a solemn warning to this Board and to the country. If the purpose of the railway executives as reflected in the utterances and acts of General W. W. Atterbury, are not restrained, the Transportation Act will be emasculated and rendered abortive, this Board will be destroyed insofar as its efficient functioning is concerned, and we shall have endless turmoil and instability in the railroad industry.

In the circumstances we are constrained to ask that this Board before proceeding to a determination of any other causes now before it shall require the carriers to comply with the letter and spirit of the provisions of the law under which we are endeavoring to function as public servants. Failing this it shall be our earnest effort to inform the public and the Congress of the United States as to the real situation in this controversy to the particular end that Congress shall not enact into law the pending measures for the financial relief of the railroads. At this moment the carriers of the country are attempting to dip their hands into the United States Treasury and extract the enormous sum of $750,000,000, which is only their initial effort. It is our contention that the merits of these colossal drafts on the revenue of the country should not even be considered by the national law makers so long as the carriers refuse to come before this Board with clean hands and demonstrate to the public that they will honestly comply with the law. The Winslow bill has passed the House and the Townsend bill is now on the Senate calendar. However, we do not apprehend that either bill can become a law until the railroads have kept faith with the public and with the railway workers.

This law was passed primarily at the instance of the carriers. It contains features against which we protested; but we are law-abiding, and since its enactment it has been our constant endeavor to comply with its every requirement. Nor have we sought to destroy the efficacy of the law or the efficiency of this Board by seeking special privileges and asking extraordinary decisions or ruling to further our selfish interests.

Meeting of Executives on February 18

The Association of Railway Executives, in its meeting on February 18, unanimously accepted a report from its Labor committee and unanimously adopted resolutions making clear that the railways will not accept the plan proposed by leaders of the labor unions to the Railroad Labor Board for national conferences between the labor unions and the railways regarding rules and working conditions and wages of unskilled labor.

The Association made clear that its opposition to the present National Agreements with certain classes of employees, and its opposition to national conferences, must not be construed in any way as an attack upon labor organizations themselves.

"What we have been trying to do, and all we have been trying to do," the Labor Committee said in the report adopted by the Association, "is to get the opportunity to deal with our own employees so as to restore the efficiency of labor on these railroads, and if possible avoid non-employment and defer serious wage reductions. The leaders of the labor unions by the position they have taken have directly raised the issue whether the maintenance and increase of the power of the national labor unions shall be placed above the public interest in the efficient and economical operation of our transportation system."

This statement referred especially to the demand made by Mr. Jewell, to the Railroad Labor Board on February 17. The report of the Labor Committee follows in part:

Report of Labor Committee of Executives' Association

Pursuant to the resolution adopted by the member-roads on January 7, 1921, the labor committee met in Chicago on January 27, 1921. For the information of the committee, each company had been requested by the chairman to give certain information regarding its earnings and labor conditions. The committee found the situation was even worse than it had anticipated; that there was grave danger that the necessities of the carriers and justice to the public would require the initiation of numerous cases for reduction in basic wages before the United States Railroad Labor Board—following its then procedure—could possibly render its decision on the abrogation of the pending national agreements and rules and working conditions; and that a situation would develop through which the Labor Board would be utterly unable to meet and promptly dispose of all the issues presented; and that the possibility of orderly procedure would be destroyed and superseded by confusion and chaos.

When the resolution instructing the labor committee to meet was adopted by your association, the general condition of the railroads, and especially their financial situation, was very unsatisfactory. The present freight and passenger rates were fixed late in August. On the basis of a 6 per cent annual return on the valuation of them, fixed by the Interstate Commerce Commission, in September, October and November, the railroads as a whole actually earned in these months, in which an unusually large business was handled, but two-thirds of the return expected.

Between the time the labor committee was instructed to meet and the date of its meeting, the railroad situation had rapidly become worse. There had been an unprecedented decline in traffic with most serious effects upon the net operating income. The net operating income it was estimated that on a 6 per cent annual basis the railways should earn in December was $86,800,000. The amount they did earn was approximately $17,000,000. The rate of return earned in September was 4.1 per cent; in October, 4.6 per cent; in November, 3.3 per cent; in December, only 1.4 per cent; in the four months, 3.35 per cent. Telegraphic reports received from individual railways throughout the country showed that the results of operation in January were even worse than in December. Many railroads were not earning, and with the current costs and traffic had no prospect of earning, their bare operating expenses, leaving them without any net return to meet their fixed charges.

Over 300,000 railroad cars were idle, as well as hundreds of

locomotives, compared with a year ago when there was a shortage of about 60,000 cars. Eliminating idle facilities and tracks it is estimated that at present prices over a billion dollars of equipment was unproductive. Possibly 280,000 men had been discharged by the railroads and the working time of those retained in service in many cases was reduced.

The time for recruiting unskilled labor forces for 1921 was at hand and the industries, the municipalities, and business generally had been employing unskilled labor at rates much below those established by the Labor Board. Meantime, important changes had taken place in other lines of business. The reduction of railway traffic reflected an extensive curtailment of production. In many branches of industry wages were being reduced. This was especially true as to wages of unskilled labor, which, except on the railroads, were being reduced throughout the country.

While regretting the informality, the labor committee decided that the situation required that its chairman should appear before the Railroad Labor Board on January 31, lay before it the acute situation of the railways, and make certain suggestions to it regarding matters over which it has jurisdiction under the Transportation Act.

National Agreements Limited to Federal Control

The question of continuance of the national agreements, rules and working conditions established under government control had been pending in one form or another ever since the railways were returned to private operation on March 1, 1920. They were limited by their nature and express provisions to the period of federal control. Immediately upon the expiration of federal control, demand was made by the labor organizations that the railroads as a whole accept and continue them in toto. The conference committee representing the railways definitely declined to discuss the question of national agreements, rules and working conditions with the national representatives of the labor unions because only the question of increased wages had been referred by the President of the United States to the bi-partisan committee representing the employees and the railways. The labor organizations then on April 28, 1920, presented to the railroad companies individually demands that these agreements be continued by them individually. Except in a few instances no bona fide conferences or negotiations were had because the local labor union officers presenting the national agreements did so under instructions from their national officers, which precluded these local labor representatives from agreeing with the officers of individual railways to a single alteration or modification.

Despite these facts in conformity with the demand of the labor organizations, and over the protest of the Conference Committee of Managers representing the railways, the United States Railroad Labor Board in its wage decision of July 20, 1920, took jurisdiction of the subject of rules and working conditions in the wage controversy. The labor organizations made their presentations in support of continuance of the agreements at the time they made their presentations for advances in wages. The following is from a letter from the United States Railroad Labor Board, dated December 18, 1920, to the heads of all the labor organizations:

"This Board has set Monday, January 10, 1921, as the date of the hearing on that portion of the dispute between certain carriers and your organizations submitted to this Board on April 15, 1920, which was not decided in Decision No. 2. The said portion of that dispute relates to rules and working conditions. *The Board understands that your organization submitted its presentation as to rules and working conditions as a part of its submission of said dispute.*"

When the hearings were renewed on January 10, the spokesmen of the labor organizations stated that they rested their case except for such rebuttal as they might make to the railroads' presentation. They had never up to that time presented a single argument or theory in support of the proposition that the same rules and working conditions should be applied to the railways throughout the country regardless of the wide variation in local conditions, although they had had ample opportunity to do so.

The conference committee representing the railways then began its presentation against continuance of the national agreements and had practically finished it when your labor committee met in Chicago on January 27. Therefore, when the chairman of your labor committee appeared before the Board on January 31, the main presentations had been practically finished, but the real seriousness of the situation had not yet impressed the public, nor did the labor organizations or the Labor Board feel the urgency for a prompt decision.

Unreasonableness of Existing Rules

The committee representing the railways had laid before the Board voluminous and conclusive evidence showing the unreasonableness of the existing rules and working conditions, and especially the unreasonableness, injustice and wastefulness of applying the same rules and working conditions to railways throughout the country. Therefore, not only was there no impropriety whatever in asking that the Board should at once terminate these rules and working conditions, but your labor committee had decided that they would be derelict in their duty to the railroads and to the public to hesitate in presenting the actual condition of the railroads, and requesting the prompt action the situation demanded.

The financial condition of the railways made it imperative that no effort should be spared to increase the net operating income. This, as we pointed out to the Board, could only be done either by an advance in freight and passenger rates or a reduction in operating expenses, and "with declining prices and wages in industry and agriculture the country demanded that the solvency of the railroads must be assured by a reduction in operating expenses, and not by a further advance in rates."

Not only the evidence which had been presented by E. T. Whiter's committee on behalf of the railroads, but also statistics of the Interstate Commerce Commission, showed that the national agreements, rules and working conditions forced on the railroads as war measures were causing gross waste and inefficiency, and were among the main reasons why on the present high rates the railways were unable to earn a reasonable return. We estimated that the elimination of this waste would reduce railway operating expenses at least $300,000,000 a year. This estimate was conservative, in view of available facts regarding the excessive increases in the number of employees and in the pay roll in every branch of railroad service to which the national agreements, rules and working conditions had been applied.

Between 1914 and 1917, before the wages, rules and working conditions of certain employees had been nationalized, the railways handled an increase in freight traffic of 31 per cent with an increase in the number of their employees of only 93,000, or 3,000 men per one per cent increase in freight traffic. On the other hand, while, between 1917 and 1920 the increase in their freight business was only about 13 per cent, the increase in the number of their employees, as shown by the statistics of the Interstate Commerce Commission, was 261,000, or over 20,000 men per one per cent increase in freight traffic.

It was because we believed the Labor Board had sufficient testimony and facts from the representatives of both the labor unions and the railroad companies to show that these national agreements, rules and working conditions were causing enormous wastes and inefficiency, and because the railway situation had become so acute as to make further continuance of this waste and inefficiency a menace to the solvency of many railroads and to the national welfare, that your labor committee instructed its chairman to appear before the Board on January 31 and suggest immediate abrogation of these agreements, rules and working conditions.

It has been charged before the Railroad Labor Board by spokesmen of the consolidation of labor unions that our suggestion that these national agreements, rules and working conditions be abrogated is a part of a huge plot originating in Wall Street, to break down labor organizations. The record of the proceedings as outlined shows that the railways began opposing a continuance of these arrangements immediately after their properties were returned to private operation, when production in the country was at its height, when the demand for labor in all lines exceeded the supply, and before the so-called "open-shop" movement in other industries was begun.

Railways Have Acted in Public Interest

The record demonstrates that the railways have acted throughout independently, primarily in their own interest, but also in the interest of the shippers, the farmers and industries.

That record completely disposes of the charge that we began and have continued the effort to prevent continuance of these working rules and arrangements as a part of any attack upon the labor organizations. What we have been trying to do, and all we have been trying to do, is to get the opportunity to deal with our own employees so as to restore the efficiency of labor on these railroads, and if possible avoid non-employment and defer serious wage reductions.

Our effort to do this cannot be construed as an attack upon the labor unions, except upon the assumption that efficiency of labor upon the railroads is incompatible with continuance of the strength and growth of the consolidation of labor unions, represented by Mr. Jewell and his committee.

The Railroad Labor Board rendered a decision upon our suggestions on February 10, holding that it could not approve the re-establishment at once of the agreements, rules and working conditions in effect upon each railroad as of December 31, 1917, because it could not assume without evidence that they were just and reasonable. The Board said that the duty is imposed upon it by the Transportation Act, of determining just and reasonable wages and working conditions for employees of carriers, and "all questions involving the expense of operation or necessities of railroads and the amount of money necessary to secure the suc-

cessful operation thereof are under the jurisdiction, not of this Board, but of the Interstate Commerce Commission."

It added: "This Board is not insensible, however, of the fact that the national agreements, rules and working conditions which are the subject matter of the dispute now being heard by the Board, do affect the expenditures of the railroads. If any of these rules and working conditions are unjust and unreasonable, they constitute an unwarranted burden upon the railroads and upon the public. It is, therefore, the duty of this Board to use the utmost practicable expedition, consistent with the necessary time for hearing and consideration, in determining whether any of the rules and working conditions now in effect are unreasonable."

The Board also denied our request that so much of its Decision No. 2 as fixed wages for unskilled labor be set aside and the prevailing rates for unskilled labor in the various territories served by any carrier substituted. The following is quoted from that part of its decision, relating to this matter:

The boundaries of the power of this Board to decide controversies between railroads and their employees are set out in Section 307 of the Transportation Act. Section 307 (b) provides:

"'The Labor Board upon the application of the chief executive of any carrier . . . shall receive for hearing and as soon as practicable and with due diligence decide all disputes with respect to the wages or salaries of employees not decided as provided in Section 301.'

"Section 301 provides that it shall be the duty of all carriers and their officers, employees and agents to consider disputes in conference between representatives designated and authorized so to confer by the carriers or the employees or subordinate officials thereof directly interested in the dispute. If the dispute is not decided in conference, it shall be referred by the parties to the Railroad Labor Board."

The recognition by the Board of the fact that the national agreements, rules and working conditions affect the expenditures of the railways, and that if any of these rules and working conditions are unjust and unreasonable they constitute an unwarranted burden upon the railroads and upon the public, is clear and helpful. We have proved that these arrangements are unjust, unreasonable, and are imposing an undue burden upon the railways and upon the public.

The present railway situation is so acute that we also hope that the Board will, to quote the assurance given by it in its decision, "use the utmost practicable expedition consistent with the necessary time for hearing and consideration." The Board in its decision said it is "endeavoring to perform this obligation (of acting expeditiously) and will be better able to succeed in doing so if it is not further interrupted by the introduction of unwarranted demands by either party." We take this to mean that the Board will require both parties in future to deal solely with the matters actually before it, and will not yield to demands of the spokesmen of the labor organizations that it permits them to introduce a large amount of entirely irrelevant matter about alleged "conspiracies" against labor unions—demands obviously made to divert attention from the real issues and to cause protracted delays.

The decision of the Board upon our suggestion regarding the wages of unskilled labor shows that before this question will be given formal consideration it must be brought before the Board in controversies arising from conferences between the railways and their employees.

In one important respect the position taken by the Board regarding this matter is gratifying. It seems to mean that in future the Board will act, as it evidently was intended by the Transportation Act that it should act, as a court of appeal, and will not take original jurisdiction of any matter until it has first actually become the subject of controversy between the railways and their own employees. The contention that the Board should not take jurisdiction of any matter until it had been the subject of conferences and controversy was taken by the conference committee of managers in opposition to the demands of the consolidation of the labor organizations that the Board, without such previous conferences and controversy, should take jurisdiction of the question of national agreements, rules and working conditions. The conference committee of railroads has contended throughout that the steps necessary to bring the question of national agreements, rules and working conditions properly before the Board never were taken. It is the earnest desire of the individual railway companies to confer and negotiate with their own employees regarding all questions affecting wages and working conditions before these questions are taken before the Railroad Labor Board; and this is in accordance with the letter and spirit of the Transportation Act.

The decision of the Board upon our request for immediate approval of reductions in the wages of unskilled labor relegates the initiation of action upon this matter to the individual railways and their own employees.

The following resolution was later adopted by the association:

Resolution Adopted by Executives

RESOLVED, That it is the sense of the Association of Railway Executives that the following fundamental principles should guide the railroads of the United States in their relations with their employees:

1. That the conduct of modern transportation is a great co-operative enterprise requiring for its highest success the honest and loyal co-operation of both employer and employee.
2. That Section 301 of the Transportation Act requiring every reasonable effort and conference and negotiation between each carrier and its own employees to avoid disputes which might result in interruptions to traffic should be complied with in spirit and in letter.
3. That one of the great advantages of private over government ownership and operation of railroads lies in the greater adaptability of individual railroads to the geographical, social, economic and operating conditions which vary greatly with different portions of the country.
4. That the restoration and maintenance of this variation is essential to private operation and to its ability to furnish efficient and economical transportation at the lowest possible rates.
5. That in view of the foregoing facts it is in opposition to sound public policy to require all railroads to operate under rigid and uniform rules and working conditions or under rigid and uniform wages, not only because it prevents efficient and economical operation but equally for the reason that it inevitably results in injury to and dislocation in other industry and to farmers and stock raisers, who are brought into competition with the railways for labor.
6. That under normal conditions the adjustment of rules and working conditions and of basic wages cannot successfully be made the subjects of national conference and negotiation, as that implies by its very nature a violation of the differing needs of the railroads and of the territories which they respectively serve.
7. That any insistence by leaders of railway labor organizations that their claims to recognition shall be admitted in violation of the foregoing principles can only result in precipitating a clear cut issue between the interests of the public in the conditions essential to efficient and economical railroad operation and the alleged interests of railway employees in standard and uniform wages and working conditions, regardless of the differing needs of the various railroads and of the widely differing character, needs and resources of the various parts of the country which they serve.

Executives Ask Carriers to Negotiate With Employees

T. DeWitt Cuyler, chairman of the Association of Railway Executives, announced that, following the meeting of the member roads in Chicago on February 18, the following letter, signed by General W. W. Atterbury, chairman of the association's labor committee, had been sent to each individual road:

In previous correspondence numerous companies have indicated that the prevailing rate of wages of common or unskilled labor in their territory has greatly declined below the rates set by Decision No. 2 of the United States Railroad Labor Board of July 20, 1920. They have stated that they were being subjected to criticism because of failure to bring their wages for the same kind of labor into some fair relation to the now prevailing rate.

When I appeared before the United States Railroad Labor Board on January 31, urging the immediate abrogation of the national agreements, rules and working conditions, I also suggested some form of general permission which would enable the carriers to use the prevailing rate of wages for common or unskilled labor in other industries as a minimum rate for railroad employment. The decision of the United States Railroad Labor Board, dated February 10, holds that this matter can be raised only as a result of negotiations between carriers and their employees.

Accordingly, the adjustment of the wages of common or unskilled labor is a problem for each individual carrier to be handled by it in accordance with the conditions prevailing in its locality. Whether or not adjustment should be undertaken at this time, and what classes of common or unskilled labor should be affected, are questions of policy for the determination of each individual carrier. So, likewise, is the determination of the new rate of wages which the company attempts to negotiate. The only matter of common concern is that the procedure must be in strict accordance with Section 301 of the Transportation Act, and with the decisions of the United States Railroad Labor Board. This will in general require a thirty-day notice of a desire to meet and confer with duly accredited representatives of the classes of common labor proposed to be involved; the endeavor at such conference to negotiate a satisfactory reduction in wages; and, in event of failure, the certification of the dispute to the United

States Railroad Labor Board with such evidence as to prevailing rates of wages in other industries and decline in the cost of living as will in the opinion of the company tend to sustain the justness and reasonableness of the proposed reduction.

The Board Replies to Jewell

The Labor Board on February 19 announced in reply to the requests made by Mr. Jewell for either a continuance of the hearings on national agreements until March 14 or the remanding of the controversy to joint conferences, that representatives of the maintenance of way employees would reply to the carriers' presentation beginning on March 1, followed by similar presentations in support of the demand for the perpetuation of the agreements made with the clerks, firemen and oilers and signalmen. Mr. Jewell will, according to the Board's ruling, appear before the Board on March 10. Mr. Jewell's request to remand this controversy to joint conferences between the carriers and the employees was ignored by the Board in its ruling.

Decisions in A B & A and Missouri & North Arkansas Cases

The disputes between the employees of the Atlanta, Birmingham & Atlantic and the Missouri & North Arkansas and these carriers—the hearings on which have been described in previous issues of the *Railway Age*—have been remanded to the parties involved, by decisions of the Board handed down on February 21. After reviewing the history of the case, the Board's ruling as to the Atlanta, Birmingham & Atlantic said:

In view of the fact that the record shows clearly that no conference has been held between the parties with reference to the justness or reasonableness of the wages fixed by decision number 2 of this Board, the Board does not deem it necessary to decide to what extent, if at all, a carrier's financial condition is a factor in the determination of just and reasonable wages to be paid by such carrier.

In the judgment of this Board the conferences heretofore held do not constitute a compliance with section 301 of the Transportation Act, for the reason that no conference has been held between the parties with reference to the justness and reasonableness of the present wages.

It is the decision of this Board that it is without jurisdiction to determine the present dispute until section 301 had been complied with by conference of the parties, the subject matter of which conference shall be whether the present wages are just and reasonable.

The Board further decided that further consideration of this dispute be deferred until it shall be made to appear that the parties have conferred and determined on the question of whether present wages are just and reasonable, based on the relevant circumstances as required by the Transportation Act, 1920, or until parties have refused to enter into conference on the said question.

A similar ruling was made in the Missouri & North Arkansas dispute, the following being added to the decision:

It is the opinion of this Board that the action of the carrier in reducing wages February 1, 1921, after an application for a hearing had been filed by the organizations interested was improper. However, extenuating circumstances exist in this case, particularly in that this Board failed to act in the premises prior to February 1. For this reason the Board does not deem it judicious to proceed under section 313 of the Transportation Act.

It is the decision of the Board that all employees, including those who have been laid off, on their being returned to service accept under protest the wages offered.

If the parties do not reach an agreement in the conference required by this decision the Board will set March 5 as the date of a further hearing of the dispute and will determine what wages are just and reasonable with reference to the carrier and will make its decision effective as of February 1, 1921.

If conference is refused by the carrier, this Board will proceed under section 313 of the Transportation Act, 1920.

FOREIGN TRADE amounting to more than 1,000,000 pounds sterling was carried by British commercial airplanes from the inception of the service in August, 1919, to the end of November, 1920.

A Municipally-Operated Mountain Railroad*

By A. J. Cleary,
Assistant General Manager, Hetch Hetchy Railroad

THE HETCH HETCHY RAILROAD, owned and operated by the city of San Francisco, Cal., begins at a junction with the Sierra Railroad, 26 miles east of Oakdale and continues eastward for a distance of 68 miles to the Hetch Hetchy water supply and power project dam site. Its primary object is to transport construction materials for this dam. The railroad is standard gage, with a maximum grade of four per cent and a maximum curvature of 30 deg. Its cost was approximately $30,000 a mile, or $2,000,000 for the entire road.

For motive power we first experimented with engines of the Shay type, since the grade was regarded as steep for rod engines, and the curvature seemed to be rather excessive but the cost of maintaining geared locomotives was found excessive. Accordingly, specifications were prepared for a 90-ton Mikado locomotive which would be built to negotiate our grades and curves. This was furnished by the American Locomotive Company and is provided with a special lateral motion driving box. It has given no trouble whatsoever. It can make the trips much faster; it can haul as big a load, and its upkeep is much less.

Before the railroad was built hauling was done in that part of the country by motor truck and the cost was approximately 60 cents per ton mile for all types of freight. With a distance of 68 miles and 258,000 tons of freight to be moved, the difference between the cost of truck haul, the cost of hauling this freight by railroad at six cents under present conditions means a saving of several million dollars in hauling the city's construction materials alone. There are possibilities for hauling a great deal of freight which will be obtained from the timber interests that are now building mills along the railroad. That will be back-haul and will practically be clear profit, as we would have to build the railroad anyway, for handling our own materials. The tariffs which we put into effect at the start may appear excessive, but the cost of the railroad will have to be written off within a period of 10 years, and consequently the rate which we charge for carload lots is 12½ cents per ton mile.

From a passenger standpoint the Hetch Hetchy also has good possibilities. When the Hetch Hetchy dam is built the valley will be converted into a lake, seven miles in length and about a mile wide, which will have all of the beauties of Lake Tahoe together with the scenery of Yosemite. Overtures have been made to the Southern Pacific and the Santa Fe to take over the operation of the Hetch Hetchy Railroad eventually.

For hauling passengers we have used motor vehicles equipped with flanged wheels. We also do a great deal of our freight hauling, such as express service for meat and perishable provisions for the various camps by flanged wheel motor trucks. We find that we save a great deal of the cost of operation by handling all light freight in this same manner.

PUBLIC OWNERSHIP IN CANADA.—Unless the Dominion Government Cabinet gives the board of directors of the Canadian National Railways substantial support and a free hand in the broad principles of management and operation, public ownership of railways in Canada is doomed to failure. The board cannot be held accountable for the successful operation of the enormous railway property unless it be given sufficient financial help to buy needed equipment and to make necessary replacements and repairs.—*Canadian Engineer.*

*Abstract of an address before the Pacific Railway Club.

The Montana Canyon as Seen from a St. Paul Observation Car

The Use of Helpers in Electric Train Operation*

Helper Cut in 100 Tons Ahead of Middle and Operated for Braking Over Summit and Down Grade

By W. F. H. Hamilton

Railway Equipment Department, General Electric Company

OPERATING WITH HELPERS is the common method for handling freight trains. The practice on the Chicago, Milwaukee and St. Paul was to put the helper (where only one was used) at the rear of the train just ahead of the caboose. The helper could thus be easily cut off to take water, and could be readily cut in to the train at the start and cut off the train at the summit of the grade. This method leaves one or two cars in the train, at the location where the drawbar stress changes from pulling to pushing, which are very nearly free and can change the slack either way easily. This causes trouble in handling the train and may be termed "floating slack."

It was also the practice with steam power to run helpers from the bottom of each grade to the summit; there they were cut off, turned, and then returned to their original stations, only occasionally being run clear over the hill.

Electric operation was started on much the same basis. The helpers were put at the rear of the trains while ascending the grades but were cut off at the summit and run around to the head-end of the train. There the two locomotives were connected in multiple unit and were used to control the operation down-grade.

This method of operation was tried for a month or so but the results were not entirely satisfactory. Signaling between locomotives was difficult because the trains were longer and the whistles on the locomotives were not as powerful as those on the steam locomotives. The road (leading) locomotive could not slack the entire train, which was necessary in case the helper was not ready to start and, when stopping, the engineer on the helper did not always realize it promptly. This resulted in drawbars being damaged to such an extent that they were pulled out when starting again. Much of this trouble came from the "floating slack" near the middle of the train referred to above, and also because electric locomotives do not slow down as much with the application of load as do steam engines.

How Helpers Are Now Used

The method was then tried of cutting the helper into the train about 100 tons ahead of the middle. This insures the slack being stretched out on all cars and makes starting easier because each locomotive handles practically its own tonnage. Also it was found practicable to keep the helper locomotive in the train while descending and allowing it to regenerate to assist in holding the train. This method of operation proved successful and has been used ever since.

The helpers all operate out of one station and normally run clear over the hill, returning with the next train in the opposite direction. Occasionally it is necessary on account of traffic movement to cut the helper out at the summit and let the road locomotive take the entire train down the grade. At such times both regeneration and air brakes have to be used in combination as previously described. Operating the helpers out of one station reduced the number of crews and locomotives required.

When ready to start on an ascending mountain grade with a helper in the train, the train brakes are released and the train is held by the independent brakes on the two locomotives. The engineer on the road locomotive "whistles off" and the engineer on the helper locomotive answers if he is ready. These whistles are not always heard, however. When the engineer on the road locomotive hears the helper "whistle off" or after waiting a reasonable length of time, he brings the controller onto the first or second notch and releases the independent brakes. This keeps the locomotive from roll-

* *This is the third of a series of three articles on this subject. The first (Railway Age, January 21, 1921), dealt with passenger service requirements and passenger train operation. The second (Railway Age, February 4, 1921), dealt with general requirements of freight train operation.*

ing back against the train and as soon as the brakes release the controller is moved out slowly until the train starts, or until the current is as near the wheel slipping point as it is advisable to go. This stretches all the slack in the train as far back as the helper locomotive. The engineer on the helper locomotive watches the drawbar of the car forward of his locomotive and as soon as this stretches out brings his controller onto the first or second notch and releases the independent brakes on the locomotive. As soon as they have released he notches the controller out slowly and carefully until the train starts, or until his locomotive has reached as close to the wheel slipping point as it is desirable to go. After the train has started both engineers watch their ammeters and accelerate as close to the wheel slipping point as desirable until they have reached the full parallel position of the controller.

If, however, the train does not start in what the engineer on the road locomotive considers a reasonable time he notches back his controller slowly and allows the train to drop back gradually against the helper locomotive. This is a signal to the helper locomotive to be ready to start and as soon as the engineer on the road locomotive feels the jolt of the train bunching against the helper locomotive he again attempts to start as before. In cases where several attempts are made to start, this "rolling back" operation is usually repeated with increasing severity each time so that the engineer on the helper locomotive will have no doubt as to what is required. When the latter sees the train dropping back against him as shown by the drawbar of the car ahead, he brings the controller on the first or second notch and releases the independent brakes so as to be ready to start when the leading locomotive pulls the slack out of the train ahead.

In stopping the train, the engineer on the road locomotive notches his controller off slowly. This becomes apparent on the helper locomotive by the ammeters indicating a higher value of current and the helper locomotive engineer noticing this, notches back his controller to hold a slightly lower value of current than was required by the train while running. This process is continued until the train comes to rest when he applies the independent brakes and shuts off the controller. The engineer on the road locomotive does the same and sometimes applies the automatic air brakes to assist in stopping. This process of stopping requires as much or more care than starting and the control must be designed to give the proper steps both when turning off as well as when turning on.

It is really surprising how much information can be obtained from the ammeter on the helper locomotive and from the action of the drawbar of the car ahead. With a little experience and a reasonable knowledge of the profile so as to know where slowdowns may be expected it is possible to tell practically everything that the engineer on the road locomotive is doing.

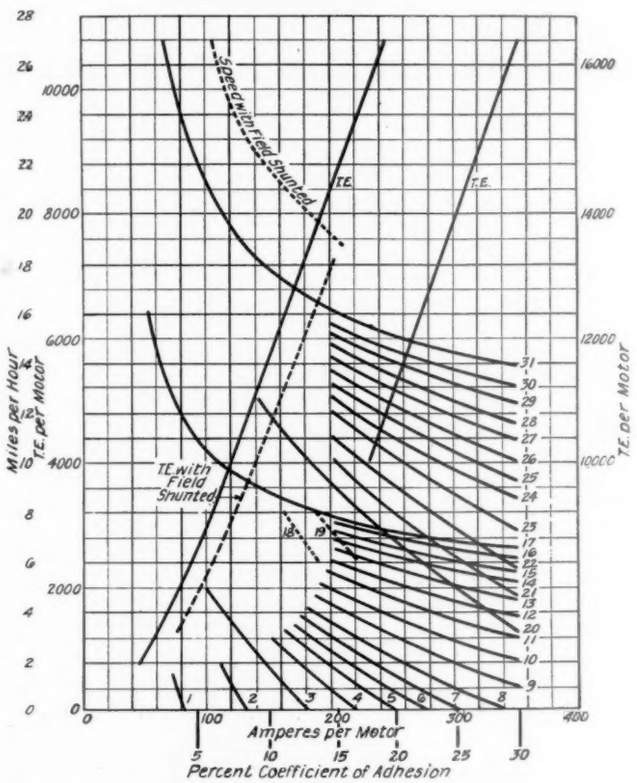
When descending a grade the helper locomotive also regenerates to assist in holding the train. If the start down the grade is made at the summit and the train has to be pulled in order to start it, the helper locomotive engineer commences regeneration when he notices the drawbar on the car ahead shove in. If the start is made from rest on the descending grade he commences regeneration when the first airbrake application is made at the same time as the road locomotive. The helper locomotive is only supposed to regenerate enough so that the road locomotive can readily control the train speed. This means that about 30 to 40 per cent of the load is taken by the helper and 60 to 70 per cent by the road locomotive. In case the helper does not regenerate enough the engineer on the road locomotive makes an application of the airbrakes and releases soon afterwards. The helper locomotive engineer notices this and knows it is a signal to increase the amount of regeneration.

When stopping, the road locomotive engineer makes an application of the automatic brakes and then shuts off his controller when the line current has dropped to about zero. The engineer on the helper locomotive does likewise and both allow their driver brakes to apply. After the train has stopped, the brakes are released on the helper locomotive and the train is held by the independent brakes on the leading locomotive only.

At the bottom of the grade the helper locomotive is cut out. The brake pipe pressure is also dropped from 90 lb. which is carried on mountain grades to 70 lb. A wise engineer applies and releases the brakes on the train twice, making heavy applications each time before starting as otherwise the brakes will stick due to what is virtually an overcharged brake pipe.

Cold Weather May Cause Many Difficulties

The operation of starting on a mountain grade is fairly easy in good weather but in cold winter weather after the train has been standing an hour or so and the oil has congealed in the journal boxes it is no easy matter. Care must be taken not to apply so much power that a drawbar will be pulled out of some car weaker than the others; this danger is always present in merchandise trains. One is often between "the devil and the deep set," for if enough power is applied to really get the train going in good shape a drawbar or "lung" may come out; if less power is applied the train accelerates slowly and there is the possibility of not being able to accelerate to a running position of the controller before the rheostats overheat.



Speed-Tractive Effort Curves on Resistance for the Electric Freight Locomotives Used on the C. M. & St. P.

The friction after the train has been running for an hour or so is about the same as it is in warmer weather but it is very high when starting. Then too there is usually more or less ice and snow on the track which makes the locomotives slip their wheels easily and requires good sanding of the track and careful watching by the engineer. It is possible by notching back a couple of notches to catch wheels that have just started to slip but once they are allowed to

spin it is necessary to shut off and start over again. Wheel slipping, especially if it occurs suddenly on mountain grades, is dangerous in that the sudden shifting of load which takes place between the two locomotives is liable to pull out or push in a drawbar. Wheel slipping can usually be detected before it becomes serious by the "fluttering" of the ammeter needle and when this occurs an application of sand must be made promptly. This "fluttering" is noticeable whether the ammeter is in the circuit of the particular motor which is slipping or not.

The airbrakes give a great deal of trouble in weather colder than 10 deg. F. The hoses freeze stiff, usually when the train is standing more or less bunched; when it is stretched out again they leak badly or open up entirely. This often causes the brakes to stick and their action is uncertain at best. When the brake pipe is leaky the feed valve chatters because of the large volume of air passing through it and this is not only very disagreeable to one who has to listen to it continuously but the valve usually manages to freeze up in time and must be thawed out. Sometimes it freezes shut, in which case the brakes apply at once due to the leaks in the brake pipe; sometimes it freezes open and admits main reservoir pressure to the brake pipe. This means that the brakes will stick after it has been thawed because of the brake pipe being overcharged. In such cases it is best to attempt to keep the train moving, although it is sometimes necessary to shut the controller off in case the additional load due to the brakes dragging causes the current to go too high.

When an application of the automatic airbrakes is made on a long train, there is first a high pitched whistle which is caused by the air exhausting from the equalizing reservoir and this is followed, in maybe a second or less, by the deep roar of the air exhausting from the brake pipe itself. With a very leaky brake pipe the leaks may draw down the pressure faster than the equalizing valve in the brake valve can. In such cases only the first high pitched whistle is heard. This usually means a damaged drawbar before the train is stopped as in such cases the brakes apply hardest at the rear of the train and the train is stretched out. To counteract this an effort is made to draw down the brake pipe pressure faster at the brake valve by making as heavy an application as possible without actually going into emergency.

Train Slack

Train slack is very peculiar and in a long train seems to give trouble in three sections; the head, middle and rear. The cars in these sections seem to run closely bunched together with considerable slack between the sections and this more or less free slack is always ready to start trouble. This is especially the case on lighter grades or nearly level stretches. There was a certain station on the C. M. & St. P. where there was a sag in the track with about 2,000 ft. of not over .4 per cent grade on each side of the sag. When running through this sag the controller had to be moved back to series in order to prevent too high a speed being attained, but still power was being applied to the train. Twice while the writer was instructing on this particular section of the road trains broke-in-two near the middle while passing through the sag. Apparently the rear end speeded up enough to overtake the head or middle portion and some cars came together enough to either uncouple, or else when the train stretched out again as it started to ascend the grade there was enough of a shock to pull out a drawbar or break a knuckle. These two cases happened within a short time of each other and give some idea of the unforeseen and unavoidable incidents which happen in freight train handling.

There was a certain canyon on the St. Paul where there were many curves on about an .8 to 1 per cent grade—just enough so that the train had to be held back a little at times when descending and yet not enough to require heavy applications of the airbrakes. Application less than 8 to 10 lb. usually mean that the brakes will stick more or less after releasing so that with steam locomotives more or less trouble was experienced in taking trains through. With the electric locomotives regeneration is used instead and the need of the light applications is eliminated and operation is thus made easier.

Locomotive Design

To meet the conditions of train handling, as outlined above, successfully the control equipment of the locomotives must be carefully designed so that sufficient rheostat steps and ample rheostat capacity will be provided. The acceleration curves on resistance of the C. M. & St. P. freight locomotives are shown on the chart. It will be noted that the change in tractive effort between notches when accelerating to a maximum of 25 per cent coefficient of adhesion is about 21,000 lb. for the total of 8 motors on a locomotive. The rheostats are designed to allow an acceleration at an average value of 210 amp. corresponding to about 16 per cent coefficient of adhesion for 25 minutes and 300 amp. corresponding to 25 per cent for 15 minutes. These capacities have proven ample in service but are not too large for winter work. It will be noted, too, in examining the curves that the steps are close together from the fourth notch to the eighth, inclusive, and are then spread out more. This provides steps close together at the most critical time in starting a heavy train. The increments in tractive effort between steps have always been satisfactory so that it may be assumed that the proper increment to use with this size locomotive is about 20,000 lb. to 25,000 lb. per step after the train is in motion.

The field shunting position gives about 50 per cent shunting which is about the maximum which can be used on account of the commutation of the motors.

It is necessary that the traction motors be so designed that they can have currents up to 20 to 25 per cent coefficient of adhesion applied for about five minutes with the locomotive stationary without injury to the commutator. This is often required in starting heavy trains. No trouble from this cause was ever experienced on the C. M. & St. P. locomotives.

Direct current locomotives using series motors for freight service have a great advantage as far as this work is concerned in that the tractive effort developed depends only on the current input and does not vary with the voltage. Therefore, variations in voltage do not affect the ability to pull the train or the current input but simply change the speed. There is some increase of heating due to slower speed of the blowers but this can be neglected for short periods. In case of reduction of voltage for any reason the trains can still be kept moving. The auxiliaries were designed to operate at a minimum of one-half normal voltage (1,500 volts) and some will operate as low as 1,000 volts, although at this voltage the air compressors will not pump up a long train. This feature is also made use of by the power limiting system which was described in the April 9, 1920, issue of the *Railway Age*.

They also have an advantage in that the speed during regeneration can be varied over quite a wide range especially if the train weight is below the maximum. This allows the lighter trains to make faster time and helps in getting trains over the road. When operating full tonnage trains on the mountain grades, practically only one speed is available ascending or descending, but there are usually stretches of lighter grades or nearly level track between mountain grade sections where it is desirable to use higher speeds.

Freight service in mountain railroading is far more fascinating than passenger service although, of course, it involves much longer and harder hours. It requires at times

the greatest skill, patience and resourcefulness on the part of the engineer, and this is not always appreciated by those who have not followed the work on the road, particularly in winter.

The writer would like to express his thanks to the engineers and others on the C. M. & St. P. with whom he was associated, particularly in the early days of the electrification, who worked out many of the methods described in this article and who also showed him many practical "kinks" in train handling that in considerable measure made the writing of this article possible.

Freight Car Loading

WASHINGTON, D. C.

FREIGHT CAR LOADING during the week ending February 12 continued to decrease, showing a reduction of over 15,000 cars as compared with the week before, according to the weekly report of the Car Service Division of the American Railway Association. The total number of cars loaded with revenue freight was 681,627, as compared with 786,633 in the corresponding week of 1920, and 687,128 in 1919. The summary follows at the bottom of the page.

The number of surplus freight cars continues to increase and for the week of February 15 averaged 392,550. There were also scattering shortages amounting to 388 cars.

The Car Service Division announces that effective March 1, 1921, the district embargo zones with headquarters at Atlanta, Boston and Philadelphia will be consolidated into one zone with headquarters at Washington, D. C., under the supervision of the Car Service Division as district representative. The following will thereafter constitute the district embargo headquarters:

District embargo headquarters	Representative	Address
1. Washington, D. C.	Car Service Division	718 18th street, N. W.
2. Montreal, Que.	C. P. Riddell, District Embargo Chairman.	263 St. James street.
3. Chicago, Ill.	J. J. Pelley, Chairman, Car Service Committee.	431 So. Dearborn street.
4. Winnipeg, Man.	E. J. Stone, District Embargo Chairman.	Union Station.
5. Ft. Worth, Texas	R. L. May, District Embargo Chairman.	11 Touraine Building.

To minimize the expense incident to the present method of handling embargoes, some of the smaller roads which heretofore received embargo notices from district embargo headquarters at the points mentioned have been assigned to a designated trunk line connection for the purpose of *receiving* embargo information issued by other roads. There will be no change in the present method of *placing* embargoes by the roads affected. Where a road is shown as being assigned to a trunk line connection that road will receive all notices of placement of embargoes, modifications, extensions or cancellations direct from the designated trunk line connection which will promptly transmit such embargo information in the manner provided for in Circular CSD-87 and Supplement No. 2 thereto, due regard being given to the utilization of railroad wires where facilities are available.

NO SITUATION CAN POSSIBLY arise to excuse lack of good manners on the part of any employee. Courtesy is due every patron with whom we come in contact, rich or poor, well dressed or poorly dressed, no matter who he is. You will find that good treatment on your part to the patron will bring good treatment on the patron's part to you. He will treat you as well as you treat him. Courtesy always brings big dividends. It pays you, and it pays the company. It pays you, because it makes friends for you and saves complaints against you by patrons, thus raising your standing with the company. It pays the company, because the company is always judged by the conduct of its employees. Courtesy is simply the exercise of kindness and helps make life go smoothly. Nothing makes so many friends as kindness. Nothing adds so much to our own equipment and character. We can all be kind if we choose. It is true that kindness never fails of its reward. It is also true that discourtesy toward a patron under any circumstances is a betrayal of the company's interest. Practice courtesy, not some of the time, but all the time. Your record will speak for itself, should you be reported for some seeming grievance by a patron. If you are courteous to all patrons, the company will soon hear of it, because the public, as a rule, will find pleasure in praising your work. If your manner is discourteous, the public takes equal delight in doing all it can against you, and then the company's interests, as well as your own, suffer. Look above the weaknesses of individuals in the crowd and meet discourtesy with courtesy, impatience with patience. We can do much towards educating the public by example.—*E. E. Nash, general manager, Minneapolis & St. Louis.*

PENNSYLVANIA RAILROAD STOCKHOLDERS on February 1, 1921, numbered 134,743, an increase of 1,675, compared with that of January 1, and of 14,434, compared with the totals of February 1, 1920.

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS, COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO AND FOR WEEK ENDED SATURDAY, FEBRUARY 12, 1921

Districts:	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Merchandise L.C.L.	Miscellaneous	Total revenue freight loaded: This year 1921	Corresponding year 1920	Corresponding year 1919	Received from connections: This year 1921	Corresponding year 1920	Corresponding year 1919
Eastern	1921	4,492	2,877	42,605	959	8,434	844	45,521	53,381	159,113	.....	.....	183,665	.....	.....
	1920	4,949	2,848	49,524	3,952	6,090	1,994	24,950	77,239	.....	171,546	160,610	.....	216,214	187,121
Allegheny	1921	1,856	2,867	46,327	5,265	3,248	2,642	32,676	46,710	141,591	.....	.....	98,536	.....	.....
	1920	2,698	3,055	49,738	3,204	4,024	2,416	33,495	62,534	.....	161,164	144,412	.....	116,145	119,632
Pocahontas	1921	167	94	13,957	139	1,451	51	2,460	4,897	23,216	.....	.....	12,867	.....	.....
	1920	176	99	20,041	731	1,864	302	156	9,614	.....	32,983	26,400	.....	18,309	19,315
Southern	1921	3,184	1,796	21,830	660	12,866	942	36,664	29,464	107,406	.....	.....	60,998	.....	.....
	1920	3,904	2,454	24,682	321	16,709	2,524	20,151	55,205	.....	125,950	108,939	.....	79,893	64,989
Northwestern	1921	10,042	8,214	5,856	1,617	18,735	1,136	24,245	27,633	97,478	.....	.....	43,587	.....	.....
	1920	10,006	7,804	13,518	1,166	20,464	1,582	20,274	39,934	.....	114,748	103,199	.....	61,731	47,640
Central Western	1921	8,937	9,817	16,557	290	2,934	2,078	27,374	28,796	96,783	.....	.....	42,369	.....	.....
	1920	9,872	9,969	23,764	463	5,630	2,798	22,082	43,440	.....	118,018	94,074	.....	67,290	55,616
Southwestern	1921	4,201	1,791	4,654	96	6,214	401	15,952	22,731	56,040	.....	.....	46,961	.....	.....
	1920	3,974	2,553	7,104	140	6,931	567	16,469	24,486	.....	62,224	49,494	.....	50,749	42,796
Total, all roads	1921	32,879	27,456	151,786	9,026	53,882	8,094	184,892	213,612	681,627	.....	.....	488,983	.....	.....
	1920	35,579	28,782	188,371	9,977	61,712	12,183	137,577	312,452	.....	786,633	.....	.....	610,331	.....
	1919	33,839	33,369	140,999	.....	57,120	14,882	.....	406,919	.....	.....	687,128	.....	.....	537,109
Increase compared	1920	.....	.....	.....	.....	.....	.....	47,315	.....	.....	.....	.....	121,348	.....	.....
Decrease compared	1920	2,700	1,326	36,585	951	7,830	4,089	.....	98,840	105,006	.....	.....	.....	.....	.....
Increase compared	1919	.....	.....	10,787	9,026	.....	.....	184,892	.....	.....	.....	.....	48,126	.....	.....
Decrease compared	1919	960	5,913	.....	.....	3,238	6,788	.....	193,307	5,501	.....	.....	.....	.....	.....

L.C.L. merchandise loading figures for 1920 and 1919 are not comparable as some roads are not able to separate their L.C.L. freight and miscellaneous of 1919. Add merchandise and miscellaneous columns to get a fair comparison.

February 5	36,875	31,277	155,917	10,381	54,066	8,501	182,221	217,759	696,997	762,680	692,614	495,860	599,454	551,312
January 29	39,830	32,368	162,652	9,749	53,677	7,693	179,123	214,844	699,936	803,332	718,297	489,184	589,838	577,709
January 22	46,695	35,255	168,453	11,177	49,159	7,991	176,581	207,804	703,115	804,866	734,293	491,640	589,000	608,751
January 15	44,861	35,125	183,228	10,483	45,241	9,590	173,500	207,860	709,888	840,524	758,609	509,708	627,293	609,260

Getting Better Results from Railroad Organizations*

Subordinate Officer Occupies a Strategic Position, but Is Not Properly Trained to Fill It

By George M. Basford

DISCUSSIONS ON REDUCING COST of transportation do not really begin before someone mentions the real key to the situation, which is effort of the individual all along the line to improve his production, to save. The next thing mentioned is the foreman and supervision. The foreman today is the most vital influence on the road.

Giving my conclusion first I am going to suggest what seems to me to be an absolutely unquestionable necessity on railroads today. I am going to suggest a foreman for a new job. The job is to take charge of the whole railroad organization, as an organization, as a general foreman of personnel, but the man would have a title and standing that places him next to the chief executive of the road. This officer would supply a missing link in our troubled days. The chief executive was formerly so close to the small organization that he could know every man. Not only did he know every man, but he handed to them, by contact, his ideals, his desires and his inspiration. As organizations grew this link was lost. It must be found again. At this precise point in the development of railroads, and in the present complication of their problems there is nothing to be done that will net as much as securing the co-operation of the rank and file for increased production and the reduction of cost of transportation. The minute the men in the ranks, on the track, in the shops, yards, terminals, trains and engines center their minds to the fact that the best thing they can do for themselves, for the railroads, and for the public, is to get busy to save dollars, the railroads will be saved.

It is not enough that some should be striving or that some departments should be organized for effective effort of the individual. It is necessary that the effort should be general, bringing departments into combined efforts. Now we hear men say, "I should worry, the coal is not charged to my department." To answer this there must be some way for these men to learn the policy of the road with respect to coal, and the policy with respect to everything they use.

It Takes a Shock to Wake Us Up!

Is it radical, is it revolutionary to suggest a high officer for the exclusive administration of the organization as an organization, who will himself be a part of the policy of the company and whose duties are to see that everybody from himself down to unskilled labor understands that policy? Sometimes it takes a shock to wake us up. Right now we are having one. Until organization questions receive some sort of consistent attention we shall continue in trouble and in trouble that has a remedy.

How can anyone defend such a thing as this? An important department of one of our fine big railroads has not once in 30 years been presided over by an officer who grew up on that road and in that department, but in this time many importations have been made. All have been able officers but they came from "outside." Think this over!

Another big road recently had a narrow escape. A vacancy in a high position was about to be filled by an outsider when the president's attention was called to a man already in the service, who for years had been preparing for exactly that position. He was promoted. He has made good. Some say, "We need new blood." The answer is you already have it. Circulate it. Every time a stranger is imported to a high position notice is served on the entire organization that it is useless for the individual to exert himself. This is just what has happened on many of our railroads. When foremen and men see this why should the men desire to be foremen and why should foremen wish to go higher?

"Give me a bunch of good foremen and the yard will run itself," says the ship builder.

A Picture

Two years ago a large industrial organization started such a plan. It involves 15,000 men in a number of plants and includes a very large office and sales force in this country and abroad. A remarkable man was selected to manage personnel, training and promotion. He reports to the board of directors and works with the executive assistant to the president. Policies are established by conferences in which the personnel officer has a part. He carries these policies out through and with the organization, everybody knowing that he represents the highest authority. He has begun with recruiting, training and promotion questions, is developing cooperation such as is seldom seen and has made remarkable headway in better understanding among not only the different plants of the company but among the officers and men of individual plants.

To succeed the policies must be definite and the objects of the organization must be known. This officer is supplying through the organization itself that which was lost when great growth came. He is bridging the distance that was rapidly increasing between the executives and the men. He has established apprentice schools, workmen's schools and foremen's schools, which means that the foremen are studying men and methods of dealing with them and are becoming managers of men. The work he is doing is entirely applicable to the railroad, the small road as well as the large one. The railroad needs the facts he is collecting. Who have we got in our employ? What is he doing? What is he capable of doing when trained to do it? The roads need the job analysis he is making for his company and the system he is working out to find and fit men to the jobs.

Chief Clerk

Let us think a moment how chief clerks are selected. It is a personal matter with the officer. Chief clerks sign the officer's name, take action for him in his absence. I have seen over one hundred officers of a certain road in conference for several days at headquarters here in Chicago—while the chief clerks ran the road. Because this is personal service these men are selected with personal care and from men who have been through long periods of training. Naturally they make good. We should therefore think of two things in this case.

First, these men are often good material for promotion. Think of this—the chief clerk is close to his superior. He absorbs from his superior the things that made that superior successful. He grows by his contact with a bigger man. This is training, of the sort that we are talking about. Moreover, the chief clerk is in an exposed position where good work shows up quickly and clearly. Let us get the obscure men up into a brighter light and see what happens.

Second, every man on the road must and does act for the

*From an address before the February meeting of the Western Railway Club.

boss in his absence and should be selected with equal care and should be trained as well. Every man signs the name of the boss on every job he does and the railroad is about 150 ft. to 200 ft. wide and perhaps 2,000 miles long. The boss is away most of the time from most of his subordinates.

Biggest Job on the Road

Someone has said that "the foreman is the top sergeant of industry." Nothing is more true or more important in any industry than this. The character of an organization is up to the character, ability and progressiveness of the foreman. No matter who or what the captain is, the company is practically useless unless the top sergeant is right. If the foreman is a timeserver, as sometimes he has been taught to be, the men will be timeservers also and the result is well known. Who on a railroad ever gets shop foremen or yard foremen together to tell them how important their jobs are and to show them that to their men they represent the railroad? Are they encouraged to know the manhood, ability and possibilities of their men? Does the foreman look with his own eyes alone or does he look with the eyes of the management? Does he know his men when off the job? Is he their friend and advisor?

How is a new foreman selected when a foreman leaves? He may be most skilled with his hands and may be most proficient with his own work, but he must know how to manage and operate the most complicated, most delicate machine in the world—a human organization with intricate problems always present. Is he usually told about the management of men and is he helped and supported as he should be in that management?

Foremen's Schools and Meetings

Some big successful industries are getting to a point of appreciating what foremen can do and are already holding foremen's schools and foremen's meetings to bring these important men to see their own possibilities. Remarkable results are being obtained by leading the foremen to realize that they are really administrators of human affairs, that they require wisdom as well as ability, that an army is what its commander makes it, that the gang reflects the leader and that the leader must know and have the confidence of the men he leads.

In the question of shop foremen a new situation developed instantly when piecework was abolished. It is not true that piecework furnished the incentive to the individual worker, whereas incentive in earlier days had been supplied by the foremen? Under piecework the foremen deteriorated, in some cases to the mere checking of work. Foremanship received a knockout when, by piecework, men received more than the foremen did. When piecework disappeared this left many roads with foremen who were not trained at all and did not know how to furnish the incentive to the men. This is not the fault of the foremen, but of the system of things which changed. It confirms the opinion that the loss of inspirational contact has been serious.

The Traveling Engineer

Is it possible that these vitally important men can get closer to the men on the engines and represent to them the ideals and the humanity of the wonderful organization of a railroad? There is no finer body of men than those who run our engines, but as a body what do they know, what do they see of the management? It is represented to them by rules, the breaking of which means trouble. These men can affect the treasurer's figures more than any other class of men on the road. For instance, they can improve ton-mile figures more than anyone else can. I believe that a 10 per cent saving in fuel lies in the hands of these men whenever the desire to save it is made an ideal with them and when the idea of saving is "sold" to them.

Here is the man who must be the manager of his men. He is often isolated and must rely on himself and frequently faces great difficulties of weather, lack of facilities, even of conveniences, and without sufficient subordinate supervision in his work. His work is a continuous emergency. A big roundhouse job is as big as the head of the department had a generation ago.

The new officer we are talking about would give the roundhouse foreman great encouragement, would help him get the facilities he needs inside aud outside of the roundhouse. This officer would be able in a short time to provide him with trained men. Here is a good place for a start to be made in reducing idle time of engines. Here is where industrial intelligence counts heavily. Co-operation counts most of all. Despatchers should understand the roundhouse. Traveling engineers should spend enough time there to understand how engines come in off the road.

Track Foremen

Here are men who work alone. Weather, flood and unexpected trouble add to daily routine. Here training and encouragement count, as everybody knows who has had occasion to rely on these remarkable men in emergencies. In the case of track foremen industrial intelligence is of great value because of the nature and conditions of their work. These men have a wonderful opportunity to effect small savings that in the aggregate are huge.

Recruiting Offices

Without a systematic method for taking recruits into employment, without insisting that employing officers should work to a certain plan or system the character of recruiting will depend largely upon and will be limited by the ability, the personality and methods of those who do the hiring. Various manufacturing plants employ highly trained recruiting officers in employment offices. Some concerns go so far as to employ psychological tests, others use intelligence tests, means for selecting recruits having become a science. We may hold different opinions as to the tests suggested and used, but it seems decidedly necessary that greater care in some form should be exercised, especially in recruiting for permanence. Those who have made exhaustive study of employment offices and recruiting offices in industries say that there is no case on record of this work having been abandoned when once started.

Employment management in industry has become a profession, devoting itself to getting and keeping men through uniform, consistent policies.

Recruiting Along the Road

Let us select for various jobs young men and boys who are recommended because of character, physical ability and the necessary intellect. One way to select them is to enlist the aid of local officials along the line of road. Station and local officials of all departments may be asked to recommend those they know about or whose parents they know. The headmaster of the grade school or the principal of the high school, the clergy, and even the local judge may and will recommend the best material when they are interested to do so. Having in mind office boys, apprentices and young men it stands to reason that living along the line of the road they will already have an interest and an embryo undeveloped loyalty to the property from which the loyalty so greatly needed under present conditions may have promise of development Wherever this is done the results have justified the plan and it seems worthy of consideration.

Labor Turnover

To engage new men, teach them their duties and launch them into service costs a lot of money. To engage, train and then lose them in large numbers is a very serious loss. It is

one of the biggest leaks in industry. To hire and lose a skilled man costs from $250 to $300 in one industry which has been studied. It must cost railroads more than that because in many cases great damage is done by such men. I know of one large railroad shop which for three years in fairly busy times had not found it necessary to go beyond its own apprentice graduates to supply all the skilled talent needed and in that period no skilled workman was hired from outside.

Inspiration

A large majority of men take pleasure in accomplishment of a good piece of work. Making something, repairing something or making a good run over the road brings satisfaction and is in itself an inspiration. Praise is often in order but must be used with discretion, so also censure. Notice taken in either case indicates that the company cares whether work is done well or not and most men will respond.

A road had three shops far apart and a flue job at each. One of the flue gangs had made a record. The leaders of the gangs at the other shops were sent to investigate. They went back and beat the record. This was not all. All three flue jobs were overhauled, new machinery installed and a lot of money saved. Mere expression of interest inspired those men to do good work and they were happier for doing it. It is a part of training of men to show them that the job they are doing is of great importance to the road.

Friends

Everybody needs a friend. Every young man finds a turning point in his career, a point in his life when he wakes up to a realization of his responsibility and his opportunity. It may be that a word of advice, of caution, of recommendation given at the right time will make, and the absence of it will break a career. It is most fortunate if this friend is his employer or the representative of his employer, the foreman, the general foreman, the master mechanic, the train master, the chief despatcher. In older days when organizations were small it was the boss himself. In these days of big things it is the representative of the boss. The most important thing a big organization can do is to provide the thing that bigness has outgrown—personal contact with big unselfish minds, minds big enough to give a point of view to an individual. The employer is really the best friend of the employee. If this is not true in any case it must be made true. Then it must be understood by every officer and every workman. How shall this be done? It must be somebody's business to get it done.

Good Soldiers

Nobody ever wanted "good soldiers" as railroads want them now. Railroad men are good soldiers, but who are their leaders and why? Most men are followers, in fact everyone is a follower of some sort. We worship heroes and ideals. We follow leaders more able, capable or perhaps more dominant than ourselves. Shall we follow our superior? That depends upon their leadership and we are "company men" or "organization men" depending on the influences and their strength.

What is to be done about it when others lead our people away? Is there nothing we can do? Let us remember that the "old man" used to be the leader, and let us consider the possibility of regaining some of his leadership in the days that are to come. It will be needed. Men always have followed and always will follow those whom they think "get" them most. It is important to find a way to discover, recognize and reward individual ability.

Discussion

Talking things over brings co-operation. When people get together for discussion responsibility is necessarily forced upon those present and the natural tendency is to look at the question from the other man's point of view. This is the value of meetings, especially when the object is to reveal and develop the importance of the person who has a tendency to consider himself obscure and overlooked. Nothing in any organization helps so much as for this man and that man to stand up and tell in his own way what or who is holding him back. When the accused must answer the chances are that more complete understanding will be reached. The chief who is present is not the only one who will begin a liberal education from discussions with his foremen or his men.

Apprenticeship

I use the word apprenticeship with hesitation simply because to most people it suggests merely "trades." It really represents training, thorough training of the hands, of the mind and of the morals of the lad. What we need today is a modern up-to-date substitute which will fit the times and the change from an employer with one employee to the multiple employer with thousands of employees. The principles involved remain the same. Let me quote from a report of a Massachusetts Commission on industrial training:

"In many industries the processes of manufacture and construction are made more difficult and more expensive by a lack of skilled workmen. This lack is not chiefly a want of manual dexterity, though such a want is common, but a want of what may be called industrial intelligence. By that is meant mental power to see beyond the tasks which occupy the bunch for the moment, to the operations which have preceded and to those which follow it—power to take in the whole process, knowledge of materials, ideas of cost, ideas of organization, business sense and a conscience which recognizes obligation."

Consider what the sort of training this suggests would mean in saving money for the railroads, applicable as it is to every department, every office, the track, the yard, the terminal, the roundhouse and of course the shop. Apprenticeship of this kind should not, by any means, be limited to the shops. Some roads, notably the Santa Fe, have faithfully developed apprenticeship and have enjoyed wonderful results. This road should be proud of the 1,506 graduates of its apprenticeship courses. What has been done with shop trades should now be extended to every department, every office and every job.

Selling an Idea

Experience in selling something to people who think they do not want it would help the leaders of big organizations more than they know. An organization must have ideals. To succeed these must be sold to those who are to carry out the principles—to the official staff and by them they must be sold to the rank and file. Is the ideal of reduced cost of transportation sold to the men in the ranks? Do many of the men say, "What do I care? There is more coal, more material, and more time where this came from." When the ideal that the roads are working for is sold to the men the present labor problem will be simplified. Foremen and subordinate officials can and I believe will accomplish this in the future, but selling necessarily involves something to sell—which in this case is not lacking—and ability to bring the purchaser's mind to the need to buy.

Looking Ahead

How are we to look ahead when we have so many troubles in hand? Troubles we shall always have and if years ago we had looked into the future on the personnel question our difficulties today would be less. If we do so now they will be less ten years from now.

In the development of railroads a lot has happened since the day when a road was so small that the superintendent was the only operating officer—when the master mechanic and everybody else, having to do with operation, reported to

the superintendent. The old "Czar" system has gone. In that system the "Old Man" held everyone's job in the palm of his hand, hired and fired as he liked, rewarded and punished as the old time head of the family rewarded and punished his children and there was no one to question him. In those days the captain of a ship held little more power than the railroad official.

There was something fine about the old method when the highest operating officer knew everybody. In spite of the faults of the system, which really was the best system for the time, it has left us some of the best traditions and has given transportation service some of the best of men. It gave co-operation. Co-operation had to be because there was someone on hand to enforce it. This effect of co-operation has probably done more than any other one thing to tie railroad men together and make so many of the old time railroaders feel that any man in railroad service was, in a large sense, a member of his own family. This feeling is not as strong today, co-operation is not as common, but it is, and will remain, a factor that we cannot do without. It must be provided.

Another feature of old time railroading was the training of men. I refer not only to apprenticeship, but to the careful training of every new man for his job. As a matter of course boys entering the shops were apprentices, so also were firemen, brakemen and switchmen and all the rest. In those days somebody had time to instruct new men. Whatever else we say of those days, certain features of the times indicate a thoroughness which we do not get today. In days of old, promotion was controlled by prejudice, by favoritism, sometimes by family ties, but with all the faults of the early days, men were seldom imported from other roads.

No one wants the old days back, but it is fitting to consider features of the old which should be provided with the new.

Some of these are the careful selection and training of new recruits, the spirit of the railroad men of older days, co-operation and the intimate knowledge of the men in the ranks on the part of someone in authority. Of all the things we need to take out of the past and apply to the future, the things we need the most are the selection, the training and the knowledge of men. Railroads are too big, even departments are too big to permit the operating officers to know who are working for them, but some substitute for these features of old times must be found. A way must be found for foremen at least, or sub-foremen, thoroughly to know the men working for them, their personalities, their capacities, their abilities and their qualifications for promotion. This and the selection and training of men may be supplied under present conditions and may yet make railroad service as happy as it ever was, but to accomplish this requires a lot of thought, a lot of time and a definite plan which will enlist the co-operation of the men. It calls for a high officer whose job it is to see it done.

When specially trained men were wanted in 1918, C. R. Dooley and staff delivered 100,000 trained men to the army in six months and had 40,000 more nearly ready when the armistice was signed. About 70,000 of them went across, men trained in 67 different trades. These men were selected as well as trained. Nothing that lies before the railroads is as difficult as that. The report which outlines the problem, the plan, the organization and the execution will open the eyes of any man who does not know about it.

When railroads start in to tackle their production problem in as thorough a fashion and with as complete a plan, cost of transportation will come down. Nothing will influence the workers as a real plan will do it. When they understand the plan, its objects and the country's need of it the workers will want to do their part and without their earnest efforts in co-operation success is out of the question.

There is no other way. An enlightened mind is the greatest asset on earth.

Our high official in charge of personnel cannot be expected to change the atmosphere of the organization quickly. He will not himself attempt to make the change. He will not himself attempt personally to train everybody. He will see that everybody on the road is trained, that every officer trains his own successor. He will see to it that men are specified and treated as carefully as steel and iron are. He will use the entire organization and will inspire everyone in it by concentrated effort to bring out the best in every individual in the direction of enlightened team work.

Propaganda Against American Locomotives

AN UNUSUAL TRIBUTE to the locomotives supplied to the Belgian Government by the United States builders and some interesting comments on their assistance to Belgian railway transport because of their prompt delivery have recently appeared in the Belgian official publication—"Chronique des Travaux Publics." It appears that there has been current in Belgium some malicious criticism or propaganda against these locomotives to the effect that they have proved unsatisfactory in service and that the government committed an error in securing them at an exorbitant price. The remarks in the "Chronique des Travaux Publics" deny these allegations and show on the contrary that the American locomotives have proved eminently satisfactory and have given even better service than was called for in the contracts. It is further pointed out in the article in question that the contract calls for a deferred payment over a five-year period during which time exchange may return to par in which case the price of the locomotives will be anything but unreasonable—and, most important of all, it is further shown that the prompt delivery in much shorter time than deliveries have been made by Belgian or British firms has enabled the government lines to restore efficient service in a much shorter time.

The locomotives in question numbered 150. They were built by the Baldwin Locomotive Works and the American Locomotive Company. The contract for their construction was signed in Brussels on December 13, 1919. The first engine was completed at the Schenectady works of the American Locomotive Company on March 1, 1920. All of the engines were completed by June 15 and stripped and packed. All of them were in service by the first days of December, 1920. These engines have been described in the *Railway Age* in articles which appeared in the issues of April 9, 1920, (page 1144) and December 17, 1920, (page 1069).

The complete statement which appeared in the Belgian "Chronique des Travaux Publics" and which disproves the charges of inefficiency made against the locomotives built in this country is published herewith in translation:

The press has a great deal to say about the American locomotives recently acquired by the Belgian government. Those who publish the news speak of these engines in such terms that their absolute ignorance of the situation is evident. Several journals echo the ideas of the narrators who are spreading the opinion that the Minister of Railways has been tricked and has bound our railways under a ruinous contract.

The origin of these rumors apparently goes back to a report from Charleroi. It is said there that the government in buying American locomotives made a poor business deal and let itself be trapped by the promise of quick delivery.

In the first place it is said that the government, following the armistice, found in its shops only German engines constructed under different designs from our own. Furthermore, it is said that after having heard the advice of engineers the government decided to make certain changes in the design of these engines, viz., replace the original fireboxes and tubes with others of copper—more resistant to oxidation. This information is not cor-

rect, for it has never been proposed to make such changes. The government, on the contrary, is using steel tubes more and more for all its steam engines. It has recourse to brass tubes only when it finds it advantageous from a point of view of price or maintenance.

These journals have next resorted to a criticism of the American engines. Contrary to what has been said, it is the government itself which took the initiative in ordering these locomotives from America. It ordered 150 of them and they were all delivered on time. It is not true that they cost 795,000 francs each, because it is necessary to take into consideration the factor of exchange. Their purchase price was $55,250, including tender, c. i. f. Antwerp. They were paid for in Belgian treasury bonds, payable in five years. There is a good chance that the dollar at the end of five years will approach par. If the dollar were at 10 francs, the cost of the locomotive would be 552,000 francs, and if the dollar returns to par this cost will be reduced to 280,000 francs. Moreover, even supposing that the price eventually paid is even 800,000 francs, did the government do wrong in giving the order? Yes or no, following the armistice, did we need locomotives? To ask the question is to answer it. On the other hand, was it possible to get them immediately from Belgian or English concerns? No.

Another untruth. The statement has been made that not only were the American locomotives purchased at a high price but that they do not give the service that was expected of them. If we are well informed, the American locomotives measure up to the most optimistic expectations, inasmuch as we are using them on the Luxembourg line, the hardest division of our railways—and all are giving the best of service. If a fault is brought to light from time to time, it can be excused by the fact that our own class "10" and "36" locomotives are not exempt from fault, either. The good quality of the American engines is proved by the significant fact that they are used in passenger service. The most important part of the locomotive—the boiler—is perfect. There is another important consideration which proves to what flights of fancy these critics have gone; that is, the manner in which they disregard the fact that the American locomotives were built according to the specifications of the mechanical department officers (du Service de la Traction), who have specialized along this line: Messrs. Corteil and Dassesse and other engineers of the railways.

The conclusion of these critics is as far from the facts as the foregoing—that we have not sufficient motive power after having spent considerable sums to acquire it. The facts are that the amount of motive power has been increased sufficiently so that the government has proposed to let Rumania have 32 of our Consolidation type engines, 12 of the "35" class and 6 of the "30" class. The administration has, in addition, offered for sale 93 engines of the "28" class.

It is alleged, also, that the government, about to repeat its mistake, has instructed its engineers to draw up new plans. This is not true. It is said, moreover, that in ordering engines from the United States, the government injured the industry of the country. Now, the industry of the country has not been injured at all, because 100 locomotives were ordered in this country—to be delivered within the first six months of the new year—yet without anyone cherishing the hope of actually receiving them at that time. The same can be said of the English railway supply industry from which 200 engines were ordered to be delivered before December 15, 1920, and of which order no one expects even the first ten until April, 1921.

When all motive power is newly placed in service there are always certain modifications suggested by actual operation.

In operation the American locomotive measures up to the conditions of the contract agreed to by the builder. These conditions were: to haul 1,000 metric tons (1,409 short tons) at a speed of 36 kilometers (22 miles) an hour up a continuous grade of 5 millimeters (to the meter, or 0.5 per cent). It has hauled, however, with ease the load called for by the contract, not at a speed of 36 km., but at 42 kilometers (25 miles) an hour. It has shown great durability in road service and it operates on a curve of a radius of 120 meters (370 ft).

It is only just to admit that in service the engine under consideration betrays some minor imperfections, due notably to the use of a metal of insufficient hardness for the brass work, to the absence of babbitt on the bearings of the side and main rods and their insufficient lubrication. These are slight inconveniences which are easily remedied.

In a word, the American locomotives are giving entire satisfaction. They conform to the technical requirements imposed and they have today already given considerable service. Some have been in service since May and June, 1920. The last were put into service in December.

We will close these comments by directing attention to the following: We shall always defend the interests of our national industry, but there are unusual situations which call for immediate solution and which we must face squarely. This is the case of the order given to American concerns. Those who today permit themselves to criticise blindly the course we have taken would cry still more loudly if, for lack of locomotives, the paralysis of our transportation system had remained of long duration. The exigencies of domestic commerce—the national economic rehabilitation—not being able to wait until our own industry could furnish the indispensable material, the state did well to acquire the locomotives from the United States as soon as possible.

Thanks to their being placed in service at an early date the government has been able to realize earnings from them at a similarly early date. This detail is not the least interesting feature of the question.

President-Elect Harding Confers With New York Central Head

THE IMPORTANCE of the transportation question of the country, its effect favorably or adversely to the manufacturer, farmer and business generally, prompted Senator Harding to call into conference on February 18, A. H. Smith, president of the New York Central, who during government control was director of the eastern region. Senator Harding has been well acquainted with Mr. Smith for a long time.

They reviewed the conditions of operation and the financial status of the railroads at present, and prospects for the future, as related to the public need. Mr. Smith, after his conference with Senator Harding, said:

"Mr. Harding appreciates deeply the basic importance of transportation to the country's welfare. He intends to go into the situation in such manner as may enable him to determine so nearly as possible what it is that causes the recurring difficulties in the transportation situation.

"The measure of regulation as related to management is to be weighed. Where there is division of authority there must necessarily be joint participation also in responsibility.

"The fact is that large improvements and additions, as well as equipment, were added by the government during the war, at war-time prices, costing approximately one and one-half to three times normal prices, and have been placed upon the railroad carriers and capitalized into freight and passenger rates instead of being paid for by the government, as other war costs were paid for, together with the added costs of labor, and the national working agreements which were applied during the war and are still in effect—these things have forced the rates on freight to such a high figure in some instances that it is slowing down production and distribution.

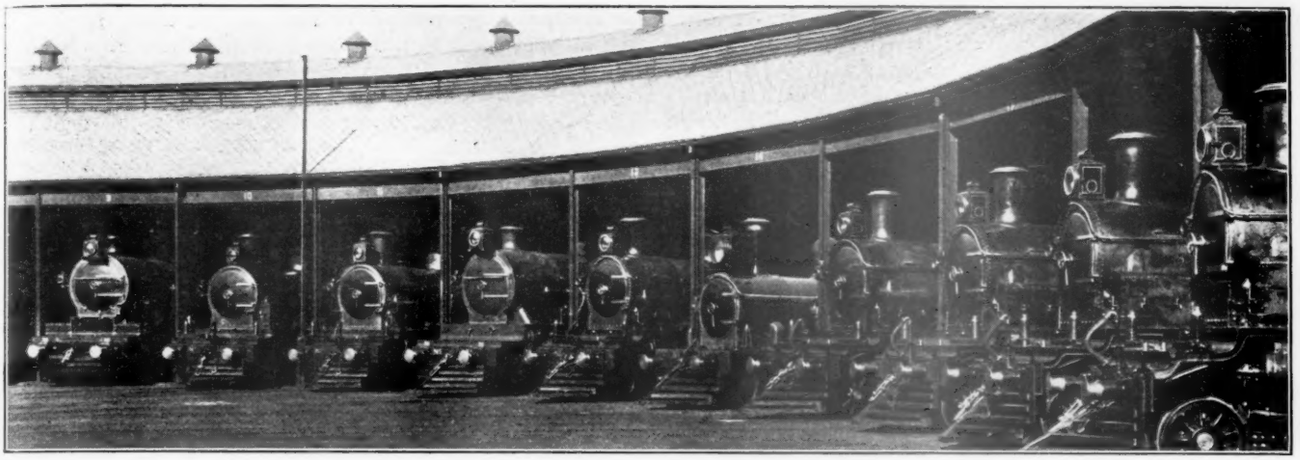
"At the same time, railroads are meeting great difficulty in paying their obligations and are laying off men and stopping repairs and betterments in order to keep themselves out of bankruptcy, when they should proceed with such work so that the roads and equipment will be in readiness for use when required.

"For these reasons, Mr. Harding wished to be informed as to the causes of the present transportation situation."

ON THE PENNSYLVANIA SYSTEM alone about 95,000 tons of new steel rails and 5,300,000 new cross ties were used last year. Of the 95,000 tons of new rail laid in 1920, 82,500 tons, or 87 per cent, was heavy 130-lb. rail. The use of heavier than 100-lb. rail was commenced by the Pennsylvania in 1915 and at the present time only a small percentage of rail used on the system is less than 130 lb. Steel rails for 1920 use cost approximately $48 a ton, an increase of $8, or 20 per cent over the previous year's cost and 63 per cent more than the cost of rails ten years ago. Cross ties cost the Pennsylvania Railroad 32 per cent more in 1920 than in 1919 and 153 per cent more than ten years ago. Since 1910 the Pennsylvania Railroad has laid 1,347,289 tons of new rail and 56,230,904 new cross ties.

Some Scenes on the Central Argentine

1—Ticket Office at Retiro Station, Buenos Ayres; 2—Concourse at Retiro Station; 3—Model of Fast Passenger Locomotive, Retiro Station; 4—Train Shed at Retiro Station; 5—Platform Ticket Vending Machine; 6—Passenger Coach; 7—Parlor Car



San Martin Roundhouse of the Central Argentine

British Railways Predominate in Argentina

The Central Argentine—A Typical Line—Is Well Equipped for Handling All Classes of Traffic

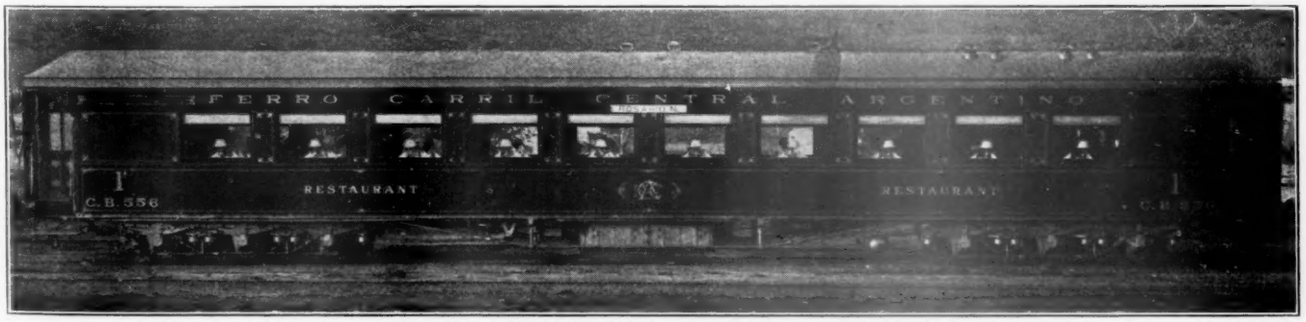
By John P. Risque

Part II

THE FIRST PART of this article, which appeared in the *Railway Age* last week, was, in the main, a general discussion of the railway situation in Argentina as a whole. In the present installment it is proposed to select a typical road and describe it in some detail, inasmuch as it would be impossible to give similar information about all of them.

The road that is chosen as being typical is the Central Argentine. We start our investigation of it at its New Retiro station in Buenos Ayres, which was described briefly in the first installment of this article. Before leaving that description, however, mention should be made of the feature of platform tickets and of the unusually interesting miniature Pacific type locomotive No. 191.

There is probably no country in the world where the institution called "platform tickets" has met with a greater response than in Latin America. Particularly is this true where ample platforms will admit of allowing, in consideration of ten cents a person, almost any number of people to pass the train gates to speed a parting friend on his way. For all Latin America counts that final "despedida," the last hug at the car window, the tenderest and most important of all good-byes. The revenue from the sale of these tickets is said to contribute about $30 a train to the coffers of the company—an item worthy of consideration at any large terminal. The tickets are dispensed by vending machines which work both day and night without any apparent interruption aside from the time required to refill them. One of the most interesting objects in Retiro station is the 1½ in.

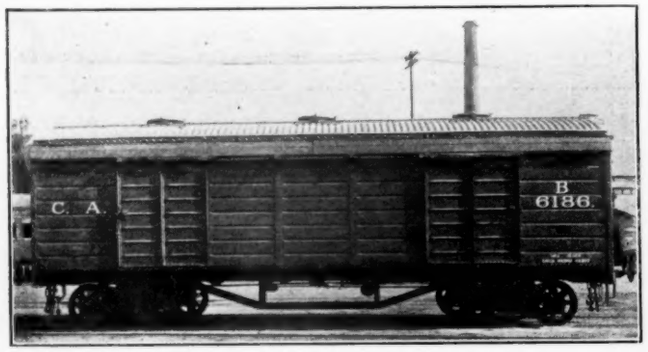


Standard Dining Car of the Central Argentine

scale model of the Pacific type passenger locomotive No. 191. This diminutive locomotive is mounted upon a mahogany base about three feet from the floor and enclosed in a glass case. Typical rails, ties and ballast support the machine the driving wheels of which are sufficiently raised from the rails to allow them to turn if one inserts a ten cent piece in the slot indicated for the purpose. All money collected is turned over to the orphan asylums of Buenos Ayres and in the little over five years during which this faithful little collector has been working, it has taken in the sum of over $14,000 and is said to have turned its wheels sufficiently to have carried it all over the system and back. The coin makes an electrical contact which starts the motor, driving

the wheels and turning on a reflected lighting system which shows the engine details well. The reproduction is perfect and the model is well finished. Lagging and jacket on the left side of the boiler and the cylinders have been left off, as well as that of the dome, for the benefit of the critical, and an open front door of the smokebox reveals that the same attention to detail as that which marks the rest of the machine is shown in the layout of the superheater pipes and front end arrangements. The model is the product of the tool room at the Rosario shops of the line, mention of which is made below.

A map of the Central Argentine Railway reveals a tendency to extend in a northwesterly direction from Buenos



A Pressed Steel Grain Car on the Central Argentine—Equipped with Manholes for Roof Loading

Ayres, the longest stretch being 694 miles from Buenos Ayres to Tucuman, the capital and largest city of the northern province of that name. Here connection is made with the Argentine Government Railways which extend to the potentially important town of La Quiaca, on the Bolivian frontier. A majority of the network of other lines operated by the Central Argentine parallel those which run from Buenos Ayres to Cordoba and Rio Cuarto. There are many branches crossing these lines at various angles, all of which combination well serves the rich agricultural and stock raising provinces of Cordoba and Santa Fe, as well as a certain section of the province of Buenos Ayres. The principal freight traffic of the line is made up of all varieties of agricultural products, live stock, hides, wool, flour, firewood, charcoal, timber and lime, which comes from the center of

The passenger receipts of this line are aided by an extensive movement to the hills of Cordoba and Alta Gracia at certain seasons of the year, where at the latter resort, the company maintains the Sierras Hotel with accommodations for 300 guests. The almost perfect climate of this region is

Front View of Central Argentine Pacific Type

an attraction in itself, to which asset the railway has contributed a rifle range, tennis courts, golf links and facilities for other sports. Tucuman's mild winter climate permits many who can afford the expense of escaping from the rigors of Buenos Ayres' winter, and Rosario de la Frontera, a point

Old "Goods Wagons" on the Central Argentine Converted to Refrigerator Cars

that industry's activities in Cordoba, as well as sugar from the district of Tucuman, which is said to produce 100,000 tons per year. Large grain elevators are owned and operated by the company at Buenos Ayres, Rosario, Villa Constitucion, San Nicolas, Cerana and Santa Fe.

further north and milder still, attracts invalids to its thermal baths. Fast express service is maintained between Buenos Ayres and the outlying cities; the time to Rosario being 4 hrs. and 30 min.; Santa Fe, 9 hrs. and 25 min.; Cordoba, where the company recently completed a new passenger sta-

tion, 13 hrs; Alta Gracia, 14 hrs.; Santiago del Estero, 21 hrs. and 30 min.; and Tucuman, 23 hrs. and 15 min. The actual mileage under operation is 3,305 and there are 409 stations on the road. The equipment comprises 679 locomotives, 787 passenger cars, 18,592 freight cars and a miscellaneous assortment of service cars amounting to 836.

Apparently, the "crack" train of the Argentine is the famous "Rapido" on the run from Buenos Ayres to Rosario, a distance of 182 miles. This train maintains a speed of about 42 miles an hour for 4½ hours, the running time between the two points. The relatively short ride on this train is typical of the best that the country affords; the trip is recommended for those whose limited time would interfere with a longer absence from Buenos Ayres. The line is double tracked and stone ballasted all the way and the train generally is made up of a baggage car, a kitchen car, a 68-seat dining car, a parlor car and two first-class day coaches with seating capacities of 82 and 72, respectively, each with from two to three private compartments in the centers of the cars. The train is vestibuled throughout and the dining arrangement is worthy of special mention. All food is prepared in the kitchen car and carried back to the diner. Meals are excellent and are served on the table d'hote plan by a well organized squad which has been trained to see that passengers get the best of service. Good wines and beer are obtainable as "extras."

The Central Argentine has not been excepted from the struggle with the fuel problem; quebracho, that famous hardwood of the country, is the principal item on the fuel bill. Oil, recently tried out on the Rapido's run, is scheduled for adoption, and preparations are being made to convert engines on a broad scale for oil burning. Conditions got so bad at one time, not so long since, that the locomotives on this line were compelled to burn corn, on the ears or otherwise—any way they could get it was agreeable.

The heavy passenger locomotives on the road are principally Pacific types of British manufacture, equipped with outside rods, pilots and headlights. The Briton's inevitable "streamline" design of the running board, extending from the front end to the windowless cab of reduced proportions, as well as the omission of sand box and bell and all of the other miscellaneous fittings that go on the boiler of the American locomotives, give these engines a trimness that is attractive. The locomotives are kept as immaculately clean as the interiors of the cars themselves and, while it is contended elsewhere that such details do not increase their effectiveness or show up on the balance sheet to an advantage, yet it must be admitted they show a pride of ownership in a manner which is entirely admirable. Of course, the labor cost of such maintenance in Latin America is low enough to make such care and attention possible. The freight locomotives are just as carefully designed from the standpoint of attractiveness as those in passenger service, and the best ones are of the 4-8-0 type, also with outside rods, and some have inclined cylinders. Superheaters are common but, due to the difficulties of securing replacements from England during the war, a number of the engines are said to be running at the present time on saturated steam. Rectangular running sheds (engine houses) are popular as locomotive terminals and are called "galpones."

The third and concluding part of this article will appear in an early issue of the *Railway Age*.

PENSIONS ON THE LACKAWANNA.—Since the operation of the pension system was started in June, 1902, the Delaware, Lackawanna & Western has paid a total of $1,684,450 in pensions to 970 of its employees who were retired either for length of service or because of disabilities received in the service of that company. On December 31, 1920, there were 457 pensioners on the Lackawanna's retired list.

88 Railroads Operated in December at a Deficit

WASHINGTON, D. C.

EIGHTY-EIGHT RAILROADS, operating 79,151 miles, failed to earn their operating expenses and taxes during December, according to a preliminary compilation made by the Bureau of Railway Economics of the returns of 202 Class I roads and large switching and terminal companies to the Interstate Commerce Commission. These 88 roads had a deficit of $20,173,000, while 114 roads, operating 153,289 miles, earned a net operating income of $37,210,000. The 202 roads therefore had a net operating income for the month of only $17,037,000, which was at the rate of only 1.17 per cent on the valuation fixed by the Interstate Commerce Commission for the purposes of the rate case. For the four months since the increased rates went into effect the net operating income of the roads has been $233,147,000 or at the rate of 3.4 per cent instead of the 6 per cent which is frequently referred to as having been "guaranteed." In September the net operating income was $75,000,000, in October it was $85,000,000 and in November it was $55,000,000. In September 49 roads failed to earn operating expenses and taxes, having a deficit of $3,471,450. In October 41 roads operated at a deficit, amounting to $2,586,733, and in November 64 roads had deficits, amounting to $7,056,598.

According to the Bureau's compilation, the 202 roads in December earned total operating revenues amounting to $550,608,000, an increase of 21.5 per cent as compared with December, 1919. Operating expenses amounted to $498,265,000, an increase of 20.2 per cent. The net operating income of $17,037,000 represents an increase of 24.1 per cent as compared with December, 1919. These figures do not take into account lap-over items growing out of settlements with the Railroad Administration.

For the calendar year 1920 the Class I railroads had a net operating income of only approximately $72,000,000, which represents a return of only a fraction of one per cent on their valuation. Moreover this includes about $50,000,000 which was included in the January accounts by the Railroad Administration as an estimate of the back mail pay owed by the Postoffice Department which has not yet been paid but for which an appropriation bill is pending. For the first eight months of 1920 the roads will ultimately receive a guaranty at the rate of $70,000,000 to $75,000,000 a month, or around $600,000,000 after allowing for the deficits. Since September 1 the roads have earned about $233,000,000 net which added to the guaranty would give the companies a return for the largest year's business they ever did of something less than the amount of the annual guaranty for the period of federal control.

Out of 194 roads whose returns for December and 12 months were published in last week's issue of the *Railway Age*, 95 had deficits for the year after paying expenses, taxes and rentals.

The preliminary report of revenues and expenses for December as compiled by the Bureau of Railway Economics is as follows:

	1920	1919	Per cent of increase 1920 over 1919
Total operating revenues:			
Eastern District	$254,351,000	$199,744,000	27.3
Southern District	87,790,000	73,657,000	19.2
Western District	208,467,000	179,903,000	15.9
United States	550,608,000	453,304,000	21.5
Total operating expenses:			
Eastern District	237,007,000	191,459,000	23.8
Southern District	77,104,000	65,023,000	18.6
Western District	184,154,000	157,936,000	16.6
United States	498,265,000	414,418,000	20.2
Net railway operating income:			
Eastern District	1,943,000	def 1,756,000	....
Southern District	7,676,000	5,812,000	32.1
Western District	7,418,000	9,668,000	d 23.3
United States	17,037,000	13,724,000	24.1

December Freight Car Performance

WASHINGTON, D. C.

THE NET TON-MILES of freight handled by the railroads in December aggregated 34,722,365,000, according to the monthly bulletin of freight car performance compiled by the Bureau of Railway Economics. This represents a decrease of about 2,700,000,000 ton-miles as compared with November, but an increase of 3.3 per cent as compared with December, 1919. The corrected cumulative figures for the year have not yet been compiled, but the total ton-mileage for 1920 was approximately 445,000,000,000, which breaks all previous records for a year.

The average carload, 31.2 tons for December, was the largest ever recorded for a month, but the average miles per car per day fell to 24.8 and the percentage of unserviceable cars increased to 7.9. The summary of the report of the Bureau of Railway Economics follows:

		Frt. car-miles (thousands)			Freight cars on line daily		Efficiency ratios		
Region	Net ton-miles (thousands)	Total	Loaded	Per cent loaded to total	Total	Unserviceable	Car-miles per day $\frac{2 \div 5}{31}$	Tons per car	Per cent of unserviceable cars
	1	2	3	4 = 3 ÷ 2	5	6	7 =	8 = 1 ÷ 3	9 = 6 ÷ 5
New England Region	929,146	54,551	35,658	65.4	101,811	10,849	17.3	26.1	10.7
Great Lakes Region	6,351,575	335,475	205,914	61.4	418,243	37,555	25.9	30.8	9.0
Ohio-Indiana-Allegheny Region	8,709,922	402,998	234,711	58.2	568,875	39,452	22.9	37.1	6.9
Pocahontas Region	2,166,941	88,425	48,842	55.2	92,166	6,764	30.9	44.4	7.3
Southern Region	4,453,501	253,141	153,705	60.7	293,139	27,233	27.9	29.0	9.3
Northwestern Region	3,846,157	215,293	134,696	62.6	346,822	28,437	20.0	28.6	8.2
Central Western Region	5,613,883	336,304	200,862	59.7	356,570	27,708	30.4	27.9	7.8
Southwestern Region	2,651,240	159,015	97,972	61.6	219,142	11,492	23.4	27.1	5.2
Grand total—all regions	34,722,365	1,845,202	1,112,360	60.3	2,396,768	189,490	24.8	31.2	7.9

Great Increases in Number and Wages of Employees

Statistics Show There Were 2,200,000 in August and Wages Running at Annual Rate of Over $3,800,000,000

STATISTICS RECENTLY compiled by the Interstate Commerce Commission and the Bureau of Railway Economics throw new light upon the extent to which the number of railway employees and their wages have been increased, especially under government control, and the actual cost of the advances in wages which were made during the period of federal control and later by the United States Railroad Labor Board.

The Commission's statistics showing the number of employees on Class I railroads and their total compensation for the two quarterly periods from January, 1920, to March, and from March to June disclose that the average number of employees during this six months' period was 1,999,142. Their total compensation, exclusive of the compensation received as back pay under the provisions of the Labor Board's award of July 20, was $1,596,680,238. Using the latter figure as a basis, multiplying by two to obtain the yearly payroll, exclusive of the Board's wage award, and adding $417,000,000, the estimated wage increase in eight months of 1920, it will be found that the railroad's total payroll in 1920 was about $3,610,000,000.

In 1917 the average number of employees on Class I railroads was 1,732,876. Their total compensation was $1,739,482,142. According to estimates based upon the Commission's figures, therefore, there was an increase of 266,266 employees and an increase in the annual payroll of $2,078,517,858 between 1917 and 1920.

Again, using the yearly payroll figure, indicated by the statistics for the first six months of 1920, and adding $625,000,000, a full year's wage increase under the Labor Board's award, it will be seen that the railroads' payroll following the wage award was at the rate of $3,818,000,000.

These estimates are made upon the assumption that the number of employees remained the same throughout the year. This, however, was not true. Beginning in April the number of employees in service increased each month, the highest mark being reached in August when, according to figures prepared by the Bureau of Railway Economics, there were 2,210,000 employees. This represented an increase over the April number of 257,554 employees and over 1917 of at least 500,000 men.

Beginning in September the carriers, pressed with the necessity to reduce operating expenses in the face of a rapidly declining traffic, began to curtail their forces. By the end of the year approximately 300,000 men had been laid off. From this it can be seen that the reductions which were made in the working forces were almost offset by the increases which had been made earlier in the year.

The statistics which have been prepared by the Bureau of Railway Economics and which are given in the accompanying table, show in detail form the increases which have occurred in the number of the various classes of railway employees and in their total and average annual compensation. In general they illustrate the enormous increases in compensation and in number of certain classes of railway employees which work under the national agreements and which are now seeking their continuance. The data which are shown for 1920 is estimated on the basis of returns covering the months of January, February and March, 1920, to which has been added the additional compensation which would accrue to each class under the increased wages.

It will be seen from this table that the largest increases in the number of employees took place among foremen in the mechanical departments, machinists, boilermakers, blacksmiths, electricians, air-brake men, car inspectors, car repairers and mechanics, helpers and apprentices, hostlers and enginehouse men, all employees who work under the national agreement formed during federal control between the shop crafts and the Railroad Administration. These same classes of employees have received in the majority of cases increases ranging from 70 to 126 per cent.

Another interesting fact disclosed by these statistics is that every class of railway employee, with the exception of messengers and attendants and other unclassified workers, now receive at least $1,200 per year. Six groups, namely, general mechanical foremen, train despatchers and directors, yardmasters, road freight engineers and motormen, road freight conductors, and road passenger engineers and motormen, receive over $3,000 per year. Of these the road freight engineers and motormen are the highest paid, receiving an average annual compensation of $3,579. Again, 39 classes of employees out of 66 now receive $2,000 per year or more.

EMPLOYEES AND THEIR COMPENSATION—CLASS I RAILWAYS, 1917 AND 1920

Class of employees	1917			1920 (Including wage award for entire year)			Increase, 1920 over 1917					
							Employees		Aggregate compensation		Average annual compensation	
	Average number of employees	Total compensation	Average compensation	Average number of employees	Total compensation	Average compensation	Amount	Per cent	Amount	Per cent	Amount	Per cent
Gen. officers, $3,000 and up	4,230	$28,569,287	$6,754	6,045	$34,471,280	$5,702	1,815	42.9	$5,901,993	20.7	d $1,052	d 15.6
Gen. officers, below $3,000	3,486	6,263,698	1,797	2,256	4,776,664	2,117	d 1,230	d 35.3	d 1,487,034	d 23.7	320	17.8
Div. officers, $3,000 and up	1,300	4,994,032	3,842	6,050	22,353,224	3,695	4,750	365.4	17,359,192	347.6	d 147	d 3.8
Div. officers, $3,000	9,430	17,519,593	1,858	7,449	17,559,832	2,357	d 1,981	d 21.0	40,239	0.2	499	26.9
Clerks, $900 and up; Clerks, below $900 per annum	184,063	171,499,913	932	234,898	399,316,081	1,700	50,835	27.6	227,816,168	132.8	768	82.4
Messengers and attendants	8,506	4,375,157	514	11,052	11,191,672	1,013	2,546	29.9	6,816,515	155.8	499	97.1
Assistant engineers and draftsmen	11,989	13,722,480	1,145	10,217	19,227,124	1,882	d 1,772	d 14.8	5,504,644	40.1	737	64.4
M. W. & S foremen	8,038	9,619,428	1,197	8,148	19,646,402	2,411	110	1.4	10,026,974	104.2	1,214	101.4
Section foremen	40,368	35,744,163	885	41,522	77,210,233	1,860	1,154	2.9	41,466,070	116.0	975	110.2
General foremen—M. E. department	1,549	2,572,550	1,661	1,859	5,648,892	3,039—	310	20.0	3,076,342	119.6	1,378	83.0
Gang and other foremen—M. E. department	18,043	24,386,355	1,352	25,488	71,015,312	2,786	7,445	41.3—	46,628,957	191.2	1,434	106.1
Machinists	41,112	57,321,897	1,394	64,861	154,515,701	2,382	23,749	57.8—	97,193,804	169.6	988	70.9
Boiler makers	12,931	18,423,117	1,425	20,504	50,706,999	2,472	7,573	58.6—	32,283,882	175.2	1,048	73.5
Blacksmiths	8,115	10,210,190	1,258	10,807	24,180,573	2,237	2,692	33.2—	13,970,383	136.8	979	77.8
Masons and bricklayers	1,361	1,269,437	933	1,040	1,988,839	1,912	d 321	d 23.6	719,402	56.7	979	104.9
Structural ironworkers	885	897,720	1,014	586	1,286,408	2,195	d 299	d 33.8	388,688	43.3	1,181	116.5
Carpenters	53,084	49,870,186	939	51,998	101,693,500	1,956	d 1,086	d 2.0	51,823,314	103.9	1,017	108.3
Painters and upholsterers	11,087	10,537,323	950	12,223	24,796,693	2,029	1,136	10.2	14,259,370	135.3	1,079	113.6
Electricians	9,564	9,853,748	1,030	14,460	33,764,056	2,335	4,896	51.2—	23,910,308	242.7	1,305	126.7
Air-brake men	5,904	6,412,801	1,086	8,064	18,950,441	2,350	2,160	36.6—	12,537,640	195.5	1,264	116.4
Car inspectors	19,661	22,425,120	1,141	26,349	63,894,207	2,429	6,688	34.0—	41,469,087	184.9	1,284	112.5
Car repairers	66,531	66,073,861	993	89,239	188,835,280	2,116	22,708	34.1—	122,761,419	185.8	1,123	113.1
Other skilled laborers	52,989	56,440,502	1,065	59,733	133,170,385	2,229	6,744	12.7	76,729,883	135.9	1,164	109.3
Mechanics' helpers and apprentices	86,021	70,718,313	822	129,757	212,526,724	1,638	43,736	50.8—	141,808,411	200.5	816	99.3
Section men	241,435	145,164,191	601	255,526	310,585,913	1,215	14,091	5.8	165,421,722	114.0	614	102.3
Other unskilled laborers	107,564	74,773,897	695	120,460	166,772,338	1,384	12,896	12.0	91,998,441	123.0	689	99.1
Foremen of const. gangs and work trains	2,567	2,648,162	1,032	1,497	3,599,994	2,405	d 1,070	d 41.7	951,832	35.9	1,373	133.0
Other men in const. gangs and work trains	36,759	22,957,221	625	20,598	30,309,978	1,472	d 16,161	d 44.0	7,352,757	32.0	847	135.5
Traveling agents and solicitors	5,979	9,806,571	1,640	1,811	4,005,708	2,212	d 4,168	d 69.7	d 5,800,863	d 59.2	572	34.9
Employees in outside agencies	1,741	1,855,028	1,065	1,020	1,817,396	1,782	d 721	d 41.4	d 37,632	d 2.0	717	67.3
Other traffic employees	613	815,275	1,330	405	901,488	2,226	d 208	d 33.9	86,213	10.6	896	67.4
Train despatchers and directors	5,101	9,184,669	1,801	5,944	18,504,273	3,113—	843	16.5	9,319,604	101.5	1,312	72.8
Teleg. and telep. oper. interlockers	7,694	7,358,623	956	8,149	16,370,024	2,009	455	5.9	9,011,401	122.5	1,053—	110.0
Teleg., telep. and block oper.	20,526	18,813,933	917	21,917	41,940,016	1,914	1,391	6.8	23,126,083	122.9	997	108.7
Levermen (non-teleg.)	3,463	2,946,378	851	3,901	7,285,873	1,868	438	12.6	4,339,495	147.3	1,017	119.5
Telegraphers-clerks	11,250	10,037,611	892	12,193	23,217,069	1,904	943	8.4	13,179,458	131.3	1,012	113.5
Agent-telegraphers	19,421	18,414,893	948	19,591	39,242,207	2,003	170	0.9	20,827,314	113.1	1,055	111.3
Station agents (non-telegraphers)	14,476	15,044,554	1,039	13,882	28,690,270	2,067	d 594	d 4.1	13,645,716	90.7	1,028	98.9
Station masters and assistants	592	764,833	1,292	631	1,256,672	1,992	39	6.6	491,839	64.3	700	54.2
Station service employees	117,494	83,389,697	710	125,566	187,607,793	1,494	8,072	6.9	104,218,096	125.0	784	110.4
Yardmasters	3,719	6,702,730	1,802	4,258	14,027,978	3,294—	539	14.5	7,325,248	109.3	1,492	82.8
Yardmasters' assistants	2,507	4,274,626	1,705	3,606	10,617,935	2,945	1,099	43.8—	6,343,309	148.4	1,240	72.7
Yard engineers and motormen	18,933	33,907,275	1,791	23,545	66,043,769	2,805	4,612	24.4	32,136,494	94.8	1,014	56.6
Yard firemen and helpers	19,516	21,348,404	1,094	23,821	51,471,521	2,161	4,305	22.1	30,123,117	141.1	1,067	97.5
Yard conductors (or foremen)	18,703	29,650,752	1,585	23,146	59,451,348	2,569	4,443	23.8	29,800,596	100.5	984	62.1
Yard brakemen (switchmen or helpers)	48,451	64,282,899	1,327	56,767	131,284,226	2,313	8,316	17.2	67,001,327	104.2	986	74.3
Yard switch tenders	4,848	4,102,855	846	6,661	12,168,478	1,827	1,813	37.4—	8,065,623	196.6	981	116.0
Other yard employees	3,984	2,655,581	667	4,952	7,750,578	1,565	968	24.3	5,094,997	191.9	898	134.6
Hostlers	8,083	10,052,260	1,244	12,282	27,461,788	2,236	4,199	51.9—	17,409,528	173.2	992	79.7
Enginehouse men	55,133	46,024,605	835	77,402	126,569,848	1,635	22,269	40.4—	80,545,243	175.0	800	95.8
Road freight engineers and motormen	34,155	72,013,998	2,108	33,625	120,350,164	3,579—	d 530	d 1.6	48,336,166	67.1	1,471	69.8
Road freight firemen and helpers	36,828	46,949,280	1,275	35,953	92,999,834	2,587	d 875	d 2.4	46,050,554	98.1	1,312	102.9
Road freight conductors	27,152	50,364,297	1,855	27,603	86,511,243	3,134—	451	1.7	36,146,946	71.8	1,279	68.9
Road freight brakemen and flagmen	67,818	81,521,397	1,202	67,747	166,908,189	2,464	d 71	d 0.1	85,386,792	104.7	1,262	105.0
Road passenger engineers and motormen	13,297	29,688,851	2,233	12,801	44,526,752	3,478—	d 496	d 3.7	14,837,901	50.0	1,245	55.8
Road passenger firemen and helpers	13,105	17,745,404	1,354	12,396	32,951,056	2,658	d 709	d 5.4	15,205,652	85.7	1,304	96.3
Road passenger conductors	10,655	20,947,221	1,966	10,654	33,233,845	3,119	d 1	a	12,286,624	58.7	1,153	58.6
Road passenger baggagemen	5,524	6,489,322	1,175	5,598	13,398,703	2,393	74	1.3	6,909,381	106.5	1,218	103.7
Road passenger brakemen and flagmen	14,854	16,246,346	1,094	15,382	34,462,680	2,240	528	3.6	18,216,334	112.1	1,146	104.8
Other road train employees	3,548	2,899,477	817	3,656	5,738,828	1,570	108	3.0	2,839,351	97.9	753	92.2
Crossing flagmen and gatemen	15,976	8,548,073	535	23,123	28,254,788	1,222	7,147	44.7—	19,706,715	230.5	687	128.4
Drawbridge operators	1,329	1,011,674	761	1,587	2,358,283	1,486	258	19.4	1,346,609	133.1	725	95.3
Floating equipment employees	11,110	10,314,174	928	11,729	19,355,993	1,650	619	5.6	9,041,819	87.7	722	77.8
Express service employees	4	753	188	.....	604	.....	d 4	...	d 149	d 19.8	...	...
Policemen and watchmen	11,310	10,139,050	896	12,164	17,522,692	1,441	854	7.6	7,383,642	72.8	545	60.8
Other transportation employees	5,780	4,889,081	846	5,489	7,200,436	1,312	d 291	d 5.0	2,311,355	47.3	466	55.1
All other employees	19,632	13,015,350	663	19,881	20,931,312	1,053	249	1.3	7,915,962	60.8	390	58.8
Total	1,732,876	$1,739,482,142	$1,004	1,993,524	$3,808,386,405	$1,910	$260,648	15.0	$2,068,904,263	118.9	$906	90.2

d Denotes decrease. a Less than one-tenth of 1 per cent.

States to Attack Constitutionality of Transportation Act

WASHINGTON, D. C.

THE CONSTITUTIONALITY of the transportation act, not only as to its provisions under which the Interstate Commerce Commission has been increasing state rates to prevent discrimination against interstate commerce, but also as to the rate-making rule which provides for a 6 per cent return on the aggregate value of the railroads, is to be attacked in the Supreme Court by representatives of the state authorities on February 28 in connection with the argument on the Wisconsin rate case. This case is the first of the state rate cases which have arisen from the Interstate Commerce Commission's orders under the provisions of the transportation act to get before the Supreme Court. It comes up on an appeal by the Wisconsin state authorities from the decision of the federal court for the Eastern district of Wisconsin, which granted an injunction asked by the roads restraining interference with the Interstate Commerce Commission order advancing the Wisconsin intrastate rates. The Interstate Commerce Commission now has rendered its decision in the cases arising from the failure or refusal, in whole or in part, of a dozen states to put into effect the percentages of increase authorized by the federal commission in Ex Parte 74 and it has uniformly ordered increases by the amount of the percentages applied to interstate rates, with certain minor exceptions such as commutation or short distance coal rates.

Conference of Attorneys General

A conference of attorneys general and rate counsel of the several states having cases pending before the Interstate Commerce Commission in which the commission is proceeding to advance state rates, or having litigation pending in the courts growing out of orders lately made by the commission attempting to advance state rates, was held at the office of John E. Benton, general solicitor of the National Association of Railway and Utilities Commissioners, in Washington, on February 16 and 17, to consider pending rate litigation and whether they should file a brief in the Wisconsin rate case.

Attorneys general or state counsel were present in person or by representative, or sent written approval of the objects of the conference, representing the states of New York, North Carolina, South Carolina, Florida, Ohio, Indiana, Illinois, Michigan, Wisconsin, Iowa, Kansas, Missouri, Louisiana, South Dakota, Nebraska, Texas, Montana, Utah, Nevada, and Arizona.

It was unanimously determined by the conference to file a joint brief in the Wisconsin case together with the state commissions represented by Mr. Benton.

The following statement was issued by the conference:

"The attorneys general and counsel present severally represent states whose sovereign rights to regulate their own internal commerce, and the rates and charges imposed upon the public for transportation of the same, have been already invaded, or are now threatened with invasion, under the Transportation Act of 1920. It is their duty to enforce the laws of their respective states, and to protect their peoples in the enjoyment of those rights and powers which were reserved to each state under the federal constitution.

"They believe that the Transportation Act of 1920 under which the Interstate Commerce Commission claims to exercise power to set aside the state statutes, and orders, rules and regulations in force under state laws ought to be declared unconstitutional for the following among other reasons:

"1. As construed by the commission, it is destructive of our dual form of government and contrary to the spirit of our institutions. From the very formation of the government there has been no question as to the constitutional right of the people of the several states to control purely intrastate traffic. This principle was upheld by John Marshall and has been uniformly admitted by all the courts of the United States to this time. The construction placed upon the Transportation Act, if sustained by the Supreme Court in the Wisconsin case, will overturn this established principle of constitutional law, and will centralize in a body of 11 men sitting in Washington power over the entire commerce of the United States, both interstate and intrastate.

"2. It prescribes a fixed return on railroad capital regardless of business conditions. Under such a law, if prices fall and traffic grows less, railroad rates increase. The commission is commanded to make rates that will yield a fixed return without regard to the value of the transportation service rendered. This is not only economically unsound, but it is violative of fundamental law.

"3. Under the group plan it commands the commission to fix an aggregate value and make rates that will yield in the aggregate the fixed return thereon. The worthless roads of the country, ill-considered ventures, duplicated lines, speculative enterprises, roads that have served their useful purpose and outlived the industries that once justified their construction—roads that perform no sufficiently useful service in the actual movement of traffic to enable them to earn—are valued with the good, and the roads that can earn, because they are the highways of commerce and traffic must move over them if it moves at all, regardless of the rate imposed, are given by this law the right to earn on their own value and the values attributed to the other roads as well. In the exact words of the act, this will enable such carriers 'to receive a net railway operating income substantially and unreasonably in excess of a fair return upon the value of their railway property.' One-half of the unreasonable excess is to be taken by the government, to be loaned to carriers or expended for equipment to be leased to them. The half that the government thus takes is an unjust tax to be expended for a selected class. The half that carriers are permitted to keep is in excess of the fair return they are entitled to by the common law. Both the half which nominally goes to the government and the half that the carriers keep represent an excess burden laid on shippers, whose right to a fair rate under the constitution is equal to the carrier's right to a fair return on its property. Because the law aims to compel the commission to disregard this right it violates again the fundamental law.

"For these and other reasons the public officials here represented deem it their duty in the first case before the United States Supreme Court involving the Transportation Act to challenge both the construction which the commission has placed upon the Act and its constitutionality as well."

A Head-on Collision on the Cambrian Railway, Wales, Resulting from Failure of Employees to Obey Rules Under Staff System of Operation

What Determines Adequacy of Railway Maintenance

A. R. E. A. Formula Offers Basis for Arriving at Settlement for Federal Control Period

By J. P. Hallinan

THE RETURN OF THE RAILROADS of the United States to their owners under the Transportation Act of February 28, 1920, brought the necessity of an early settlement of accounts with the Government for its occupancy of the proprietors, and in this adjustment some questions are being raised which seem to merit the attention of owners.

It will be recalled that the sequence of events preceding the execution of a contract between the various roads and the Government was as follows:

1. By a proclamation dated December 26, 1917, the President, acting under the powers conferred on him by the Constitution and laws of the United States, by the joint resolutions of the Senate and House of Representatives, bearing date of April 6, and December 7, 1917, respectively, and particularly under the powers conferred by Section 1 of the act of Congress approved August 29, 1916, entitled "An act making appropriations for the support of the Army for the fiscal year ending June 30, 1917, and for other purposes," took possession and assumed control, on December 28, 1917, through a director general of railroads, of all the railroads of the United States.

2. By an act approved March 21, 1918, called the Federal Control Act, Congress authorized the President through such agency as he might determine, to enter into an agreement with the owners for the maintenance and upkeep of the properties previously taken over, as well as for the determination of compensation and respective rights and obligations.

3. By a proclamation dated March 29, 1918, the President authorized director general of railroads to execute agreements in accordance with the Act of March 21.

At the time the Government assumed control of the roads, which, it is evident from the foregoing, was a wartime measure, the necessity for immediate and complete command of transportation facilities was recognized by the owners of the roads as well as by the authorities of the government. Difficulties of transport and of financing had arisen which could be solved only by consolidation of resources under unified direction backed by competent authority.

After the assumption of control had been recognized by Congress, a general form of contract was prepared. Investigation into the conditions attending the operation of individual roads, which under ordinary business procedure would be entered into prior to formulating a contract, was precluded by the urgency of the situation, with the result that the contract, as entered into, dealt only with average conditions and was expressed along very general lines. Condensed in a single statement, the contract provides that the government takes over the railroads as of midnight of December 31, 1917, at an annual rental equal to the average annual net earnings for the three-year period ending June 30, 1917, and will return them in substantially as good condition as when taken over, subject to degree of use. The measure of compensation is clearly stated and the amount of compensation was readily ascertainable from the records of the Interstate Commerce Commission.

The intent of the government to return the properties in as good condition as when received is stated with equal clearness but no measure of maintenance is provided and none was available from the records of the Commission beyond general comparisons of expenditures, affording no means of determining the character or adequacy of maintenance of road and equipment in detail with due regard to use, nor of the appurtenant facilities. Under these conditions and in view of the evident necessity of setting up some standard of maintenance, the upkeep section of the contract provides: "that the annual expenditures and charges—or the payment into funds of an amount equal in the aggregate—to the average annual expenditure and charges during the test period—shall be taken as a full compliance" with the agreement to return the property in sustantially as good condition as when taken over. It further provided that: "due allowance shall be made for any difference that may exist between the cost of labor and material—and the average for the test period and—for any difference in use—so that the result shall be, as nearly as practicable, the same relative amount, character and durability of physical reparation."

It is apparent that upon the settlement of accounts, no difficulty need be experienced in adjusting the claims for compensation. A fixed rental per annum for a definite term is a purely accounting matter. The application of accounting values, however, to physical reparation, requires comparison of the physical condition of the property at the beginning and at the end of the period covered. Unfortunately, the exigency of the situation did not permit a joint inspection at the beginning of federal control, and it was not provided for upon the return of the property, so that the roads now find themselves in many instances confronted with a statement of over-maintenance in point of money expended on a property clearly in need of immediate physical repairs. In such circumstances, it seems proper to examine further into the equities involved and to arrive, if possible, at some measure of maintenance that can be fairly applied, and that will take into consideration the degree of use.

If we consider a property that is comparatively new, on which the cycle of wear has not come fully into operation, a property still in the development period, with its traffic rapidly increasing, it is evident that its expenditures for maintenance during any three-year period will have been less than normal—and the question then becomes, not what amount per annum had been expended on maintenance during the test period, but what amount should normally have been expended, with relation to its traffic, had the rate of wear been then determined. Fortunately, this subject has previously been investigated, though from a different angle and for an entirely different reason. It was studied in detail by J. B. Berry in 1902, when considering the effect on maintenance charges of contemplated reductions in grade on the mountain divisions of the Union Pacific, and was carried on by other engineers through the committee on Economics of Railway Location of the American Railway Engineering Association. In 1913 this committee under the direction of A. K. Shurtleff, chairman, made an exhaustive investigation of the maintenance accounts for 1911, of 53 of the leading railroads, and as well of the accounts by divisions of a single system having 8,000 miles of track, for a period of four years. From the average values thus ascertained a formula was deduced which permits the scientific operation of wear due to age or decay from that due to traffic,

and the consequent calculation of the additional amount required for adequate maintenance by reason of increased use, under average conditions, on the average road.

The full report of the committee is published in the Proceeding of the American Railway Engineering Association; but as the formula has been found peculiarly applicable to the situation under discussion, the basis is stated briefly. Mr. Shurtleff departs from the sole factor of freight ton-miles generally used as a traffic comparison, and takes into consideration all other factors of mechanical wear, arriving at a basis termed equivalent ton-miles, composed of the following:

(1) Net freight ton-miles (including company freight).
(2) Freight train car miles times average weight of empty cars, excluding caboose.
(3) Passenger train car miles times two times average weight of cars and contents.
(4) Freight locomotive-miles times two times average weight of locomotives.
(5) Passenger locomotives-miles times four times average weight of locomotives.

This assumes, based on evidence accumulated by the Association, that a freight locomotive exercises twice the destructive effect on the tracks of a freight car, a passenger locomotive four times and a passenger car twice the effect of a freight car.

The factor of use was arrived at by taking the average life of materials in each account considered and comparing this with the average life under the definite volume of traffic reported. In the case of the renewals, for example, the proportion of renewals due to decay was found on the roads considered, to be 6.5 per cent of the total in the track, and the additional renewal due to traffic was found to be 0.3 per cent per million equivalent ton-miles or an addition of 0.046 per cent (per million equivalent ton-miles) to the 6.5 per cent annually renewed because of decay. Where the ties decay faster, the additional percentage due to traffic remains approximately correct. The proportion of wear in sidings, as compared with the main line for the average road is, of course, subject to increase on roads having a dense mining or manufacturing traffic where the sidings come into greater use.

It is believed that by the use of the A. R. E. A. formula in combination with the average values and rates of wear from which it was deduced, a fair basis may be established for comparison of expenditures for maintenance on all primary accounts affected by traffic. Necessarily, account must be taken, in applying average values, of important differences in physical characteristics, as of excess curvature when considering rail wear.

A concrete instance that has recently come under the writer's observation is that of a short line put into operation in 1910. The cycle of wear on this property did not come into full operation until 1918 and 1919, the period of Federal Control. Based on expenditures during the test period, properly equated in accordance with the language of the contract, the government rendered a bill for over-maintenance amounting to nearly a million dollars. Legally, the position of the government was perhaps sound, but in equity it was decidedly unsound, as it was very apparent that the property was under-maintained. Upon investigation of primary accounts, it was found that on accounts affected by traffic (which had nearly doubled during the period of federal control), the actual renewals were but slightly greater and in some instances less than during the test period, although during that period the cycle of wear had just commenced to operate. Application of the A. R. E. A. formula to these accounts, and taking as a base the less than normal expenditures during the test period, developed a standard of maintenance which, when applied to the expenditures during the period of Federal Control, showed a net deficit of more than half a million dollars, a situation more in keeping with the actual physical condition of the property.

On maintenance of equipment accounts, a similar difficulty was experienced in arriving at a measure of maintenance, the condition as to money spent and actual upkeep being as irreconcilable as in the accounts of maintenance of way. This was finally solved by the application of the factor of car-days of home cars in use for comparative expenditures on rolling stock and that of locomotive-miles per 100 tons weight per 100 man-hours repairs, as the factor most clearly indicating the adequacy of maintenance of locomotives.

In this investigation an interesting sidelight was thrown on the effect on efficiency of an administration highly centralized and detached from individual responsibility. In this case the result was a progressive loss in efficiency and in morale in all departments, athough the organization was practically the same as under corporation management, a condition which the writer believes, from experience in other countries, is inherent in all government operations of a civil character.

In applying any measure of maintenance, it is held that quantities, or materials applied, should be considered wherever possible, instead of money or book values, on the principle that the return of a property in equivalent physical condition for equivalent physical use can only be accomplished by the continued physical replacement of materials worn out, and the practical conclusion that a property cannot be said to be maintained if the rate of wear is allowed to become excessive.

For a short time—a very short time on a railroad under heavy traffic—financial equivalent may take the place of physical betterment, but eventually actual materials are required in constantly increasing quantities as maintenance is deferred, up to the point where traffic ceases, and maintenance becomes reconstruction. Accounting values can be a criterion only when taken in connection with appliation of materials at the time and in the quantity required to keep pace with the rate of wear.

The suggestion to apply the A. R. E. A. formula and average replacement quantities in the adjustment of accounts for the use of the railroads by the government does not proceed from a partisan viewpoint. As a matter of fact, its use will be found in many cases to justify an apparently excessive expenditure during federal control on roads where ing the test period. It may be made to serve, also, as a re the transportation plant had not been fully maintained durliable guide for appropriations for future maintenance (the purpose for which it was originally designed) and as a rather eloquent measure of administrative efficiency.

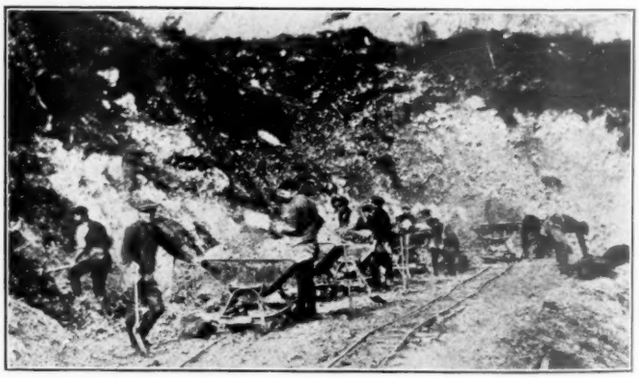


Photo by Gilliams Service

Construction of a Railway from Dover, England, to Folkestone, the First Step in the Building of the English Channel Tunnel

Railway Terminal Problems of Greater New York*

Freight Terminals in New Jersey and Rail-Head Piers Proposed to Eliminate Waste of Water Transport

By J. J. Mantell
Manager, New York Region, Erie Railroad

THE TRANSPORTATION PROBLEM in the metropolitan district is one about which considerable has been said and written. We have seen the business which moves through the port of New York increase to such proportions that the imperative need of improvement in the situation has become apparent, even to the layman. Only by the co-operation of transportation, commercial, industrial, civic, state and national bodies for a common purpose will some real practical solution of the problem be forthcoming. The matter cannot be dwelt upon in its entirety, as burdensome detail and statistics would necessarily have to be furnished, and while such data is interesting to show the uneconomical conditions which exist, it is my purpose to treat the subject in a general way on account of the limited time; then, too, there are many who are not intimate with the transportation details of the port, and statistics, at the best, are rather dry.

Importance of the Port of New York

The port of New York presents the largest, most difficult and expensive freight handling problem in the world today; there is no other port like it. The New York district leads any other port district in the Western Hemisphere in population by nearly 200 per cent. Substantially 45 per cent of the foreign commerce of the United States passes through this port, and within the district are located more manufacturing industries than in the cities of Chicago, Philadelphia, St. Louis and Cleveland combined.

In speaking about transportation we have two branches of service in mind; passenger and freight. The passenger problem is by no means as momentous as that of supplying a congested scene of industrial activity with the articles which must have an inlet and an outlet. With a population of approximately eight millions in the metropolitan district we must consider, first, an uninterrupted movement of foodstuffs in their original or manufactured state; second, the raw, fabricated and finished products required to supply the industries of the district. Then we have traffic of the same character transient to the New York district, but which is dependent upon the port; namely, the large volume of import and export business, the New England business that moves via rail and water and the coastwise steamship traffic.

Importance of the New Jersey Terminals

To give you an understanding of the volume of freight that is moved through the New Jersey shore terminals of the various railroads, approximately 90 per cent of the export and 85 per cent of the domestic freight passes through these terminals. With these few figures before you, the general plan of the railroads terminating in New Jersey may be explained as embracing large outer classification yards where the road trains are brought in, broken up and the freight grouped for various destinations in the metropolitan district. These outer classification yards are connected by freight running tracks with switching and holding yards maintained along the water front which are used for the purpose of serving lighterage piers, freight stations, float bridges, grain elevators, coal piers, industrial sidings, team tracks, etc., and the freight is moved from the outer classification yard to the waterfront yard by drag service.

*A paper read before the New York Railroad Club on February 18.

Classes of Service

To effect the delivery of freight in New York, both for domestic use and for export, the railroads maintain two classes of service; namely, car-float and lighter. Car-float service is used principally for the handling of cars from New Jersey terminals to New York pier stations and for transfer service in the harbor. Most of the domestic business is handled in cars on car-floats to the various pier stations and to the few team yards which are maintained. At the various stations the freight is unloaded and cars utilized for outbound loading. You appreciate that New York is a consuming city, with the result that a very large proportion of the cars unloaded are moved back to the New Jersey shore empty.

The export, import and coastwise steamer traffic is conducted by lighter service. A small amount of domestic freight, such as lumber, other building materials and rough or bulky freight is also handled by lighter to private or public docks. The difficulties attending the uneconomic transportation service of the port can be better understood when it is realized that almost all of the freight is divorced from a rail route and must be transported by water to reach its destination. The lighter service in New York Harbor dates back to 1862. The Erie and New York Central Railroads entered into competition for business on both sides of the North River; the Erie met the Manhattan competition by lighterage; the New York Central met the New Jersey competition in the same manner. This was actually the beginning of lighterage.

Handling Steamship Freight

Handling steamship freight by lighter service involves a highly specialized routine. On arrival of freight for export, it is necessary to secure from the consignee documents permitting delivery of freight to a certain steamer, space for which has been engaged in advance, and the railroad company is obligated to make delivery of particular consignments not later than a specified date, the time of receipt by the steamer being gaged by its ability to handle every consignment comprising its cargo and being further dependent upon the nature, size and weight of shipments.

The railroad companies have provided storage piers for what is known as covered dock freight, or freight that must be protected from the elements. They also provide storage ground for what is known as open dock freight, which does not need such protection. These facilities enable the prompt release of equipment while awaiting disposition orders on lighterage freight. Delivery of freight to steamer's side is made in covered or open lighter as best suits the individual needs, and before final delivery by the railroad company is accomplished under the present scheme, a minimum of two physical handlings of the freight have been performed. Where the freight is located on the pier or on the ground at the time delivery orders are lodged, it means that three or four handlings are required before final delivery to the steamer.

To carry on the lighterage and car-float service in this port, the railroads terminating on the New Jersey shore where their service should rightfully cease, maintain 150 tug boats, about 1,800 barges and lighters and about 300 car-floats, or nearly 2,300 pieces of lighterage equipment which is owned

by the railroads and, in addition, there is chartered for the transportation of coal, grain and other commodities, considerable more craft. The railroads entering this port are assuming very great obligations in effecting deliveries of freight to New York and when you consider that it costs as much to move a ton of freight from the outer classification yard previously described to a pier station or steamship sling, as it does to pull that ton of freight from Buffalo or Pittsburgh to the classification yard, which is located within a few miles of the New York City Hall, you wonder what is wrong.

The Real Cause of Congestion

You have heard and read many stories of railroad congestion at the port of New York during the war and most people were led to believe that it was due to inability of the railroads to take care of the business moving through the port on account of insufficient terminal yards and other railroad facilities. I happened to be in charge of railroad terminals in the New York terminal district for the Railroad Administration during the war, and while some yards were crowded and congested, it was not due to lack of proper railroad terminal facilities. The congestion and backing up was the result of the poor steamship facilities which obtain at this port.

A commission was created in 1917 by the concurrent action of the legislatures of the states of New York and New Jersey to study the problem of the port as a whole and recommend a policy to be pursued for the best interests of the entire port. It has just completed and submitted a joint report with comprehensive plans and recommendations.

The Port Commission's Report

The commission has made sixteen specific recommendations and I want to take enough time this evening to dwell on the three principal recommendations which cover the comprehensive physical plan; that is, the improved railroad system which it is claimed will be the backbone of a rational port development and the formal adoption of which, in conjunction with the compact, the commission urges upon the legislatures.

There is no question that a belt line from a point near Little Ferry on the West Shore railroad to the lower end of Newark bay, as recommended by the commission, will be constructed some day, with the industrial development that is bound to take place on the large expanse of meadow land back of the Palisades, or between the Palisades and the Hackensack river. This line would be used for industrial purposes as well as to serve steamship piers and warehouses which will follow on both sides of the Hackensack river and Newark bay in connection with the plans that Jersey City has for its west side development, and the city of Newark has for its development. This line of railroad is practicable and could be utilized for several different purposes. In addition to serving the industries and docks, it could also be used as a belt line between the outer classification yards of the different railroads.

The outer belt line which the commission plans to begin at Piermont, N. Y., on the Hudson river to pass southwesterly to the west of Paterson, N. J., and the Orange mountains, comes through the Orange range near Summit and continues in a general easterly direction to termini on deep water. A railroad of this kind would be little used; it is impracticable and does not justify present consideration. We may need a railroad of this kind in the distant future, but I doubt it.

The Automatic-Electric Railway

We now come to the most important recommendation made and that is number 2, or the so-called "automatic-electric system. The commission has evolved a plan which will release the Hudson river waterfront from pier station occupancy, will afford some relief to the New Jersey waterfront, will dispose of the New York Central's surface tracks, will provide ample capacity for the future and will still effect a large saving in terminal costs.

The plan is based on the general principle of a moving platform or a continuous conveyor placed underground. This system will resemble a railroad in appearance but will function more as a conveyor. The idea of the scheme is to link up the New Jersey railroads by a belt line along the eastern margin of the Hackensack meadows and build a joint yard and transfer station. The automatic-electric tracks will start from this station in New Jersey, pass under the Bergen hill and the Hudson river to a point in Manhattan at about 47th street. The tracks will then pass under certain streets and would serve some nine or ten warehouses and run south to a point near Battery Place where the tracks enter another set of tunnels under the Upper bay to the joint yard.

To carry out a scheme of this kind it is estimated will cost at least $240,000,000. Who is going to finance the project and how can a facility of this kind be made to pay? It would be confined only to certain kinds of domestic freight, or, in other words, small package freight, and would not be able to take care of the heavy pieces of structural steel, building materials of various kinds, machinery and other heavy articles which are so essential in our city. It would simply be a small package railroad to release waterfront piers; the overhead expense would be so prohibitive that a project of this kind could not be capitalized.

Use of Containers a Solution

I will separate my recommendations into two classes: first, the handling of domestic freight; second, the handling of export freight.

Under existing conditions the handling of domestic freight, both from a railroad and merchant standpoint, cannot be done economically. There is pier congestion; there is waiting in line; there is loading and unloading. The average truck in New York is only moving from 25 per cent to 30 per cent of the time. There is duplication and cross-haul. The problem can be solved and this would be advantageous both to the merchants and railroads, and my recommendation is that we give serious thought to a plan which would provide for the handling of freight from existing and centralized freight stations in New Jersey to warehouses and store-door delivery in New York on practically all carload business, which amounts to at least 40 per cent and create inland stations in the metropolitan district suitably located in proper zones for receiving and distributing l.c.l. freight. These inland stations would be equipped with specially arranged bodies or containers where the assortment for particular consignees and particular destinations could be made, the stations to be equipped with proper mechanical appliances for prompt handling of these removable bodies to and from tractor trailers. In other words, you can do your business on wheels, keep your motor tractor turning over, increase its efficiency, do away with the waste of rehandling on the railroad and the trucking waste which at present exists in New York and effect a real store-door delivery. A tunnel connection via Staten Island should be made to Bay Ridge and thus link the New Jersey shore with Long Island.

For the handling of export traffic, we have the beginning of a splendid steamship pier development with the rail-head deliveries planned by the Cunard line on the New Jersey shore at Weehawken. There should be a gradual development by railroad and individual enterprises of multiple-story steamship piers, properly equipped with modern machinery for the direct handling of cargo between railroad and vessel. The railroads could get together and fix switching rates for the interchange of cars between their respective terminals via rail routes instead of lighterage, and it would only require a small expenditure to develop the existing switching facilities.

Tie Producers' Convention Discusses Specifications

Meeting at San Francisco Approved Proposed Requirements of the A. R. E. A. Committee

THE PRINCIPAL ACTION taken by the National Association of Railroad Tie Producers at its third annual convention at San Francisco on January 27-28 was the adoption of standard specifications for cross ties. These specifications differ in only a few particulars from those which the Tie committee of the American Railway Engineering Association will recommend to that organization for adoption at the annual convention at Chicago in March.

The Tie Producers' Association suffered a grievous misfortune just two weeks before the convention through the death of its president, E. M. Blake of Charles R. McCormick & Company, San Francisco, Cal. Mr. Blake had fathered the project to hold the convention in San Francisco and had been the prime mover in most of the activities of the association during the past year. Through his efforts the association obtained an appreciable increase in membership and now enrolls 61 individuals and firms, producing approximately 50,000,000 ties annually. The sessions of the convention were presided over by John H. Johnson (B. Johnson & Sons, Richmond, Ind.), who was the treasurer of the association.

The Tie Specifications

The specifications as adopted by the association were presented by W. Nixon (Western Tie & Timber Company, St. Louis), chairman of the committee on this subject. They are as follows:

MATERIAL

Kinds of wood: Before manufacturing ties, producers shall ascertain which of the following kinds of wood suitable for cross ties will be accepted: Ash, beech, birch, catalpa, cedar, cherry, chestnut, cypress, elm, fir, gum, hackberry, hickory, larch, locust, maple, mulberry, oak, pine, poplar, redwood, sassafras, spruce, sycamore and walnut. Others will not be accepted unless specially ordered.

PHYSICAL REQUIREMENTS

General quality: All ties shall be free from any defects that may impair their strength or durability as cross ties, such as decay, large splits, large shakes, large or numerous holes or knots, or grain with slant greater than one in fifteen.

Resistance to wear: Ties from needle-leaved woods shall be of compact wood throughout the top fourth of the tie, where any inch of radius from the pith shall have not less than one-third summerwood in six or more rings of annual growth, or not less than one-half summerwood in fewer rings. Ties of coarse wood having fewer rings or less summerwood will be accepted if specially ordered.

Resistance to decay: Ties for use without preservative treatment shall not have sapwood wider than one-fourth the width of the top of the tie between 20 in. and 40 in. from the middle, and will be designated as "heart" ties. Those with more sapwood will be resigned as "sap" ties.

DESIGN

Dimensions: Before manufacturing ties, producers shall ascertain which of the following lengths, shapes or sizes will be accepted, and whether ties are to be hewed or sawed and in either case whether on the sides as well as on the top and the bottom.

All ties shall be 8 ft., 8 ft. 6 in., or 9 ft. long.

All ties shall measure as follows throughout both sections between 20 in. and 40 in. from the middle of the tie:

Grade	Sawed or hewed top, bottom and sides	Sawed or hewed top and bottom
1	None accepted	6 in. thick by 6 in. wide*
2	6 in. thick by 7 in. wide*	6 in. thick by 7 in. wide
3	6 in. thick by 8 in. wide	6 in. thick by 8 in. wide 7 in. thick by 7 in. wide
4	7 in. thick by 8 in. wide	7 in. thick by 8 in. wide
5	7 in. thick by 9 in. wide	7 in. thick by 9 in. wide
6	7 in. thick by 10 in. wide	7 in. thick by 10 in. wide

*Width of tie in all cases refers to the *top* width.

Northern white cedar or tamarack (larch) pole ties manufactured from timber, measuring 8 in. in diameter under the bark at the small end, shall be classed as grade No. 1. All other usable ties shall be classed as grade 0 ties.

MANUFACTURE

All ties shall be straight, well hewed or sawed, cut square at the ends, have bottom and top parallel, and have bark entirely removed.

INSPECTION

Ties will be inspected after delivery at suitable and convenient places satisfactory to the railroad, which reserves the right to inspect ties at points of shipment or at destination. Ties will be inspected at points other than the railroad's property whenever in the judgment of the railroad there is sufficient number to warrant it; but the shipper shall provide accommodations for the inspector while away from rail or steamer lines and transport him from or to a railroad station or steamer landing.

Inspectors will make a reasonably close examination of the top, bottom, sides and ends of each tie. Each tie will be graded independently without regard for the grading of others in the same lot. Rafted or boomed ties too muddled for ready examination will be rejected. Ties handled over hoists will be turned over as inspected.

Ties will be rejected when decayed in a degree sufficient to materially impair the strength or serviceability, except that the following will be allowed: in cedar, "pipe or stump rot" up to 1½ in. in diameter and 15 in. deep; in cypress, "peck" up to the limitations as to holes; and, in pine, "blue sap stain."

A large hole in woods other than cedar is one more than ½ in. in diameter and 3 in. deep within, or more than 1 in. in diameter and 3 in. deep outside the sections of the tie between 20 in. and 40 in. from its middle. Numerous holes are any number equaling a large hole in damaging effect. Such holes may be caused in manufacture or otherwise.

A large knot is one exceeding in width more than ¼ of the width of the surface on which it appears; but such a knot may be allowed if it occurs outside the sections of the tie between 20 in. and 40 in. from its middle. Numerous knots are any number equaling a large knot in damaging effect.

A shake is a separation of one ring of annual growth from another. One which is not over 4 in. long or ¼ in. wide will be allowed.

A split is a break across annual rings. One which is not over 10 in. long will be allowed provided a satisfactory anti-splitting device has been properly applied.

A tie will be considered straight: (1) When a straight line along the top from the middle of one end to the middle of the other end is entirely within the tie; (2) when a straight line along a side from the middle of one end to the middle of the other is everywhere more than 2 in. from the top and the bottom of the tie.

A tie is not well hewed or sawed when its surfaces are cut into with score-marks more than ½ in. deep or when its surfaces are not even.

The lengths, thicknesses and widths specified are minimum dimensions. Ties over 1 in. more in thickness, over 3 in. more in width, or over 2 in. more in length, will be degraded or rejected.

The top and bottom of a tie will be considered parallel if the difference in the thicknesses at the two sides or ends does not exceed ½ in., that is, one side may be 7¼ in. while the other is 6¾ in. wide; or one end may be 6¾ in. while the other is 7¼ in. thick.

All thicknesses and widths apply to the sections of the tie between 20 in. and 40 in. from the middle of the tie. All determinations of widths will be made on top of the tie, which is the narrower of the horizontal surfaces.

Ties which are oversize will be accepted as follows: 8 in. to 9 in. by 9 in. to 12 in. as Grade 4; 9 in. to 10 in. by 9 in. to 12 in. as Grade 3. Ties over 10 in. thick or over 12 in. wide on top will be rejected. Ties will be graded up by their smaller ends and graded down by their larger ends. The dimensions of the tie will not be averaged.

Split redwood ties are permitted a slight variation in size but

such variation must not be more than ½ in. one way or ¼ in. two ways.

Delivery

Ties delivered on the premises of the railroad for inspection shall be stacked not less than 10 ft. from the nearest rail of any track at suitable and convenient places; but not at public crossings, nor where they will interfere with the view of trainmen or of people approaching the railroad. Ties shall be stacked in alternate layers of 2 and 7, the bottom layer to consist of 2 ties kept at least 6 in. above the ground. The second layer shall consist of 7 ties laid crosswise of the first layer. When the ties are rectangular, the two otuside ties of the layers of 7 and the layers of 2 shall be laid on their sides. The ties in layers of two shall be laid at the extreme ends of the ties in the layers of 7. No stack may be more than 12 layers high, and there shall be 5 ft. between stacks to facilitate inspection. Ties which have stood on their ends on the ground will be rejected.

Each stack shall have fastened to it a tag on which is written the owner's name and address, the date when stacked, and the number of ties of each kind of wood in the stack.

All ties are at the owner's risk until accepted. All rejected ties shall be removed within one month after inspection.

Ties shall be stacked as grouped below. Only the kinds of wood named in a group may be stacked together.

Class U—Ties Which May Be Used Untreated

Group Ua	Group Ub	Group Uc	Group Ud
Black Locust	"Heart" Douglas Fir	"Heart" Cedars	"Heart" Catalpa
White Oak	"Heart" Pines	"Heart" Cypress	"Heart" Chestnut
Black Walnut		"Heart" Redwood	"Heart" Red Mulberry
			"Heart" Sassafras

Class T—Ties Which Should Be Treated

Group Ta	Group Tb	Group Tc	Group Td
Ashes	"Sap" Cedars	Beech	"Sap" Catalpa
Hickories	"Sap" Cypress	Birches	"Sap" Chestnut
"Sap" Black Locust	"Sap" Douglas Fir	Cherries	Elms
		Gums	Hackberry
Red Oaks	Hemlocks	Hard Maples	Soft Maples
"Sap" Black Walnut	Larches		"Sap" Mulberries
	"Sap" Pines		Poplars
Honey Locust	"Sap" Redwood		"Sap" Sassafras
			Spruces
			Sycamore
			White Walnut

Shipment

Ties forwarded in cars or vessels shall be separated therein according to the above groups, and also according to the above sizes if inspected before loading.

Discussion

The attitude of the convention was generally favorable to the specifications as many advantages of the promulgation of a general specification were pointed out. Attention was called to the fact that the standard specifications of the United States Railroad Administration enabled the western mills to take the business of the eastern roads safely, whereas in the absence of such a specification, a lack of knowledge concerning eastern trade practice would have made this considerably more difficult.

Statistical Data

One important feature of the convention was the presentation of statistical data on the production of ties throughout the United States. The production of ties in the south and southwest was low at the beginning of the year, increased appreciably during the summer months, and declined again in the fall. In the central western states the production of ties has increased greatly, 2,500,000 ties being cut in Illinois in 1920 as compared with 1,000,000 in the preceding year. In the far west, the 1920 production was about normal, aggregating between 14,000,000 and 15,000,000 ties. The outlook for a large production in this area is less favorable, for the logging for the season is done before March 1 and the present depression in the lumber industry is causing a curtailment of logging operations.

A paper by A. A. Baxter, general manager of the Douglas Fir Exploitation and Export Company, contained some interesting facts on the export of ties from the west coast during 1920 and are summarized as follows:

Untreated

United Kingdom	103,100,000 ft. b. m.
China (sold and shipped in 1920)	1,100,000 ft. b. m.
China (sold in 1920, to be shipped during the first half of 1921)	7,200,000 ft. b. m.
West Coast of South America	990,000 ft. b. m.

Treated

China—Taku Bar	415,000 ft. b. m.
India	7,411,000 ft. b. m.
San Domingo	1,473,000 ft. b. m.
Total untreated	112,390,000 ft. b. m.
Total treated	9,299,000 ft. b. m.
Grand total	121,689,000 ft. b. m.

Other Business

Other papers covered the various trade and technical problems of the tie producers and included a paper by C. L. Hill, Forest Products, United States Forest Service, on the Timber Resources of the United States, with special reference to the Pacific coast, and one by John Foley on The Tie Supply of the Future.

At the concluding session of the convention on Friday afternoon the following officers were elected:

President, Charles R. McCormick, Charles R. McCormick & Co., San Francisco, Cal.; first vice-president, J. H. Johnson, B. Johnson & Son, Richmond, Ind.; second vice-president, R. J. Witherell, L. D. Leach & Co., Chicago; secretary, Warren Nixon, Western Tie and Timber Company, St. Louis, Mo.; treasurer, J. J. Schlafly, the Potosi Tie and Lumber Company, St. Louis, Mo.

Chicago was selected as the place of next meeting.

"The Gospel of Appreciation" On the Santa Fe

J. R. Hitchcock, assistant general manager of the Atchison, Topeka & Santa Fe Coast Lines, is the author of a series of interesting educational pamphlets now being issued to employees on the coast lines. The latest circular, entitled "The Gospel of Appreciation," is designed to encourage efficiency and courtesy and to make public numerous examples of exceptionally good work by individual employees.

The circular takes up illustrations and testimonials sent in by patrons of the company, both shippers and passengers, who have been pleased with the service rendered by employees with whom they have come in contact. It then sets forth a number of instances of meritorious services which have come directly to the attention of the officers. The list covers all phases of railroad work. One trainman has discovered a defective brakebeam and by prompt action has prevented a serious accident; others have given assistance in similarly difficult situations, perhaps not in the line of duty. Still other employees have done conspicuously good work in cases of derailment. The pamphlet praises station employees, foremen and clerks who have displayed intelligence and honesty in preventing pilferage or in apprehending thieves. It tells of trainmen who have gone out of their way to move their trains on time, of agents whose warehouses are especially clean and well-kept, and who all will be rewarded for their energy and diligence.

The idea of these various illustrations is to impress the employees with the fact that good work will be recognized, no matter where, or under what circumstances, it may be accomplished. To quote Mr. Hitchcock: "It is appreciated that many trying circumstances must be encountered in the transportation game. They must be dealt with patiently, courteously and efficiently, in order to accomplish the best results. . . . . "

Winslow Partial Payment Bill Passed by Senate

Will Authorize Immediate Disbursement of Large Sums Due the Railroads Held Up on a Technicality

WASHINGTON, D. C.

THE WINSLOW BILL, authorizing and directing the Secretary of the Treasury to honor certificates of the Interstate Commerce Commission for instalment payments to the railroads on account of their guaranty for the six months following the termination of federal control, was passed by the Senate on February 22 without a record vote, in the form in which it was passed by the House on February 8, and sent to the President. The provisions of the bill will make possible prompt payments of a large part of the sums still due the railroads, estimated at about $370,000,000 for the six months' period, on certificates of the Interstate Commerce Commission for amounts certainly due pending a final adjustment of the balance. The commission was prepared to issue such certificates after September 1 and did issue some but they were not honored because of a ruling by the Comptroller of the Treasury.

There has been no indication of the attitude of the President toward the bill, although the Treasury Department has been hostile to it, but it would seem that there are enough votes for the bill in both the Senate and the House to pass it over a veto, if necessary, if it can be done within the short time allowed. The President has referred the bill to the Secretary of the Treasury and to the Interstate Commerce Commission for an opinion. The Senate had deliberately taken up the bill, amid the congestion which usually prevails toward the close of a session, with the purpose of having another day available, in case the President should disapprove the bill and keep it for 10 days, in which to pass it over the veto by a two-thirds vote. A fight against the bill was made by Senator La Follette of Wisconsin but merely served to consume time and furnish ammunition for the publicity forces of the labor organizations. The Senate voted 36 to 35 on February 21 to take up the bill in place of the agricultural appropriation bill and an agreement was reached to conclude the debate at 5:00 p. m. on the following day. The bill was passed about 3:00 p. m. after very little debate.

Senator La Follette used six hours with one of his characteristic speeches, which again demonstrated the manifold possibilities which lie in the use of statistics, presenting an amendment that no money shall be paid to the roads until after an investigation by the Interstate Commerce Commission of the expenditures of the railroads during the guaranty period, in spite of the fact that the Transportation Act authorizes the commission in ascertaining the amount of the guaranty, to make readjustments for abnormal or improper charges to operating expenses and to determine the amount to be charged for maintenance. The proposed amendment was rejected 47 to 19. An amendment proposed by Senator Kirby to eliminate the provision in the law for a 5½ or 6 per cent return on the aggregate value by repealing Section 15-a was defeated by a vote of 59 to 14 and one proposed by Senator Trammell of Florida to reduce the "fair return" to 3 per cent was defeated 61 to 7. Senator Trammell recently introduced an amendment to provide for 4 per cent as a fair return, with the idea that it would reduce freight rates sufficiently to induce the consumers to buy more Florida fruits and vegetables, but after he found that the railroads have been making less than 4 per cent on the present rates he reduced the percentage. The two amendments aroused a lively discussion of the freight rate question, Senators Kirby and Trammell insisting that the "guaranty" of 6 per cent to the railroads had put rates so high that the producers of agricultural products cannot market their products. Senator Kellogg pointed out that under the new rates the railroads have earned at the rate of only 3.3 per cent since September 1. After the 3 per cent amendment had been defeated Senator Trammell offered a 4 per cent amendment which was rejected.

Extracts from Senator La Follette's speech were sent to the press by the publicity man who has recently been handling the numerous statements to the press issued by W. Jett Lauck and the labor unions affiliated with the American Federation of Labor in their mudslinging campaign against the railroads which has been used as a smoke screen for the national agreements. He denounced the bill as providing for the presentation to the railroads of "a gift from the public treasury before the gift promised is due," and asked why the railroads instead are not required to pay back to the government the "enormous debts" which they owe on account of permanent improvements and equipment provided during the period of federal control, which the Transportation Act permits to be funded for 10 years, and for money borrowed from the revolving fund, which under the law is to be paid back in 15 years.

He said the railroads owe the government $750,000,000 for betterments and $350,000,000 for equipment provided during federal control, which he attempted to give the impression the railroads are trying to sneak off with, and $192,000,000 borrowed from the revolving fund, a total of $1,292,000,000. He took the position that the railroads themselves have delayed the payment of their guaranty by failing to present final "claims" for the amounts due, preferring to leave the accounts open—"leave the door of the treasury ajar so that they may come back year after year, pyramiding new claims upon the old and gradually swelling the total." He said that while it was intended that the guaranty would enable the railroads to give improved service, in practice it has proved an "invitation to fraud and extravagance" and in this connection he rang the changes upon the charges made by the shop craft unions regarding the car and locomotive repair work sent to contract shops. "The courageous policy," he said, "would be to repeal the law by which this gift was made. The government owes the railroads no debt. The railroads are indebted to the government in so many millions of dollars that it is doubtful if they can ever discharge the debt."

Senator Townsend of Michigan, who was in charge of the bill for the committee on interstate commerce, discussed it in part as follows:

> There is about $350,000,000 due now; $250,000,000 has been paid. This amount is due under contract with the government, under acknowledged liability by the government and the amount has been appropriated by Congress.
>
> The committee on interstate commerce have had long hearings on this subject, and we have determined upon an amendment to the Transportation Act of 1920 which is advocated by the Interstate Commerce Commission and approved by the railroads, and, as I understand, meets with no informed opposition. Under that act we had supposed, at least, that Congress had provided for the payments of the sums due in installments. When it was determined that a certain amount was actually due to the railroads, it was supposed that the Interstate Commerce Commission could make a certificate to that effect and it would be paid by the Secretary of the Treasury. It turned out, however, that the Secretary of the Treasury submitted this question to the Comptroller of the Treasury, and he advised that no payments could be made to the railroads of any amount, except in final settlement. That is the ruling today; and many of these settlements, from the very nature of things, can not be completed entirely for possibly several years.
>
> Now, not only are the railroads embarrassed—indeed, that is

hardly the greatest thing that is to be considered here—but the concerns with which the railroads have been doing business can not carry their accounts any longer. Some of them are behind in payments more than five months, and some of these concerns themselves are threatened with bankruptcy. There is certainly but one alternative for them to take, and that is to cease supplying the railroads with coal and other material. That will still more embarrass the railroads. I say to you, Mr. President, in all candor, I believe that many of these railroads, especially the weaker lines, are threatened with bankruptcy unless they can obtain the money due them from the United States and needed for their operation. Their credit has already been extended to the limit.

Your committee believes that there is no question about the obligation of the United States; but we provide that the amounts must be determined as certainly due, and the Interstate Commerce Commission is seeing to it that the full payment is not made to the railroads, but that a certain amount is reserved to meet, under all circumstances, any possible contingencies as to balances in the future.

Senator Pomerene of Ohio put in the record the following memorandum from the Bureau of Statistics of the Interstate Commerce Commission:

Revenues and Expenses Since 1917

The revenues and expenses as shown by the monthly reports of Class I roads, 1917 to 1920, are as follows:

Calendar Year	Operating revenues	Operating expenses	Net operating income	Operating ratio
1917.....	$4,050,463,579	$2,858,212,210	$974,778,937	70.57
1918.....	4,926,593,957	4,017,209,501	693,111,170	81.54
1919.....	5,184,230,244	4,419,988,750	515,793,287	85.26
1920.....	6,213,489,049	5,810,970,021	67,823,711	93.53

It will be seen that in spite of an increase of over $2,000,000,000 in operating revenues, the net return has been nearly eliminated because of an increase of about $3,000,000,000 in operating expenses. This is reflected by the increase in the operating ratio.

The volume of traffic in 1917 was slightly below that of 1918 and 1920, but somewhat greater than that of 1919. The principal source of the increased revenues is from the increase in rates. Certain increases granted by the commission in 1917 became operative for the full year 1918, but the general increase effective in June, 1918, of 25 per cent in freight rates, was reflected in the revenues of that year for only the last half of the year. In 1919 no general increases were made. In the calendar year 1917 Class I roads received an average revenue per ton mile of 7.15 mills, while in 1919 the corresponding figure was 9.73 mills, an increase of 2.58 mills per ton mile. Applied to the total freight traffic of 1917, namely, 394,465,400,493 ton miles, the increased freight charges per annum over the basis existing in 1917 amounted to approximately $1,017,720,000. In 1920 the increase in freight rates was made applicable late in August. While this increase has been estimated at 33⅓ per cent, the statistics do not indicate that the increase realized has been as great as that. Taking an increase over 1919 of 30 per cent for illustration, the increase would be 2.919 mills per ton mile, which when applied to the traffic of 1917 would produce approximately $1,151,440,000.

Passenger fares were also increased in June, 1918, and again in August, 1920. In 1917 the average revenue was 2.090 cents per passenger mile, as against 2.541 cents in 1919, an increase of 4.51 mills. Applied to the traffic of 1917, or 39,476,858,549 passenger miles, this amounts to approximately $178,000,000 annually. The increase allowed in 1920 was 20 per cent. Reports available at this time indicate that an average increase of 4.6 mills per passenger mile was realized. Applied to the 1917 traffic as above, the increased annual revenue amounts to $181,589,000. There has also been added a surcharge on Pullman travelers for the benefit of the railroads, amounting to perhaps $25,000,000 annually, and an increase in compensation for carrying the mail yielding about $45,000,000 annually.

The increases above mentioned total nearly $2,600,000,000 annually on the basis of the traffic of 1917.

On the side of expenses, wages are the principal source of increase. Increases were granted in 1918 and made retroactive to January 1 of that year. Further increases were granted from time to time by the Director General of Railroads, and there was an increase of about 22 per cent in July, 1920, granted by the United States Railroad Labor Board, the increase being made retroactive to May 1, 1920. According to statistics published by the Interstate Commerce Commission for the first six months of 1920, the pay roll of Class I roads without any of the increase granted by the Labor Board was $1,596,680,268, which, for 12 months would have been $3,193,360,536. The actual pay roll in 1917 was $1,739,482,142, an increase of $1,453,878,394. Twenty-two per cent of the $3,193,360,536, is $702,539,200. This added to the $1,453,878,394 gives a total increase in wages over the 1917 basis of $2,156,417,594.

It may further be assumed that the fuel consumed in 1917 would, at the prices paid by railroads in 1920, have cost $200,000,000 additional annually. Increased taxes account for about another $60,000,000. In addition there were increases on materials, the amount of which can not be given at this writing.

It should be said that all of the figures showing the results of increases in rates and costs are subject to revision, and are given at this time merely to illustrate roughly where the increased revenue came from and where it went. No statement can be made at this time as to the extent to which the roads were under- or over-maintained during 1920.

If the rates granted in August had been in effect during the whole year 1920, the roads would have made a better showing. What showing will be made in 1921 depends so much on the extent to which traffic revives and to what extent economies in expenditure can be effected that it is quite impossible to make a prediction. It may be noted, however, that in October, 1920, the best month under the new rates and fares and under the new wage schedules, the net railway operating revenue was $86,455,487.

A New and Novel Crossing Sign

THE NOVEL WARNING SIGN shown in the accompanying illustration has been erected by the San Antonio & Aransas Pass at the intersection of its line with Roosevelt avenue, in San Antonio, Texas. Surmounting a sign which bears the words, "Did the Driver of This, Stop, Look, Listen?" is a platform about eight feet above the ground, upon which is placed a wrecked automobile which figured in a fatal accident at a country road crossing on the Waco district of that road some time ago and which resulted in the death of two occupants of the car and serious injury to a third.

The New Crossing Sign Used by the San Antonio & Aransas Pass to Reduce Grade Crossing Accidents

A series of similar accidents at different points on the line suggested to J. H. Newberry, claim adjuster of the San Antonio & Aransas Pass, the necessity for devising some sort of a warning different from anything theretofore used, and of such a nature as would attract the attention of motorists and cause them to "stop, look and listen" before crossing railroad tracks. The new warning sign, devised as a result, seems to be serving the purpose for which intended, for it is causing much comment and the idea is being taken up by safety men of other roads.

THE HUDSON'S BAY COMPANY, which has been reported as intending to build a light railway across the 24-mile portage between Fort Fitzgerald and Fort Smith which would connect the Peace river and the Mackenzie river, has abandoned its plan for this project. It was found upon investigation that there is not a sufficient prospect of freight to justify the construction of a line.

General News Department

Fire early on the morning of February 16, destroyed a two-story shop building of the Missouri Pacific at St. Louis, Mo.; estimated loss, $100,000.

The House Committee on interstate and foreign commerce on February 19 reported favorably a bill to provide a substitute for Section 10 of the Clayton anti-trust law in the same form in which the bill has been reported to the Senate by the Senate Committee on interstate commerce.

Seven passengers and a motorman were killed and 20 passengers injured in a butting collision of electric cars between Bridgeport, Conn., and Shelton on February 22. Several persons were burned to death, the wreck having quickly taken fire from a can of gasoline (belonging to a passenger) which was in the vestibule of one of the cars and was ruptured in in the collision.

Eight thousand is the number of members of the National Safety Council who own or operate shops or other industrial plants; and the officers of the Council propose to proprietors to conduct intensive campaigns, for some particular feature of safety, in all of these plants during one month throughout the year; a month to each feature. January was devoted to special efforts to prevent ladder accidents and February to infections arising from minor injuries. For March, the program is unsafe clothing; for April, horse play.

The Interstate Commerce Commission and the American Railway Association Committee on Automatic Train Control have decided to place inspectors on the Chicago & Eastern Illinois, Chesapeake & Ohio and Chicago, Rock Island & Pacific to check up and report on the operation of the automatic train control devices in service on those roads with a view to furnishing up to date information as to what, if any, changes would be necessary if it should be decided to order an extension of the present installations or an installation on another road.

The governors of 35 states have expressed favorable opinions on the operation of public service commissions in their states; this, according to the New York Times, being the result of a questionnaire which was sent out by Governor Charles H. Brough, of Arkansas. Governor Campbell, of Arizona, the 36th governor who responded to the questionnaire, said that he could not commend the work of the commission in his state; this, however, not because of any fault in the principle of commission laws, but to the personnel of that particular commission. Twelve states seem to have furnished no replies.

Personal appearance is one of the principal things by which one is judged. It is easy to present a good appearance. It is not upon the clothes that a person wears nor upon their quality, but upon their condition, that a good appearance depends. A man may wear the best clothes, but if he is untidy, he will give a bad impression. On the other hand, old clothes, pressed and clean, will give a good appearance. It is the same with a railroad. If things are left in a slip-shod condition, material scattered along the tracks, equipment neglected, station grounds and platforms untidy, employees unbrushed, unshaved and unwashed, the public gets the impression that the railroad is run down and badly managed. If employees form the habit of thinking that "anything will do," the railroad gets the same thinking from the public.—*E. E. Nash, General Manager, Minneapolis & St. Louis.*

Full Crew Law Costs Indiana Roads $1,000,000 Yearly

The full-crew law of Indiana costs the railroads of that state a million dollars a year; and Frank E. Lewis, general superintendent of the Chicago, Indianapolis & Louisville, at a meeting of merchants and manufacturers in Lafayette on February 15 urged them to co-operate with the railroads in seeking the repeal of the law. He said that the law was costing $1,000,000 a year without contributing anything to the safety of train operation. The third man is only in the way. He told the shippers that inasmuch as they were paying the bill they should lend a hand to the movement for the repeal of the law. Fifty shippers present agreed to communicate with representatives in the legislature, urging them to vote for the repeal.

Loyalty Means Obedience and Justice

E. E. Nash, general manager of the Minneapolis & St. Louis, in a circular to his subordinates, says:

"In the operation of a railroad nothing is more essential than obedience. The first requirement of a good officer is obedience. He has no right to expect a subordinate to do anything which he is not willing to do himself. An officer is obedient when he is just to his subordinates and loyal to his superiors. He will command obedience when he frames his orders carefully and so issues them that his subordinates can obey them. It is demoralizing to issue a mass of instructions when it is known that some of them cannot be carried out. This makes an executing officer or employee careless; and soon he begins to use his own judgment as to which orders he will obey. This looseness soon permeates an entire organization."

The Snell Forestry Bill

The National Forestry Program Committee, with headquarters at New York, is calling the attention of all users of forest products to the Snell Forestry Bill, now pending in Congress, which provides for a comprehensive national forestry program in order to establish a continuous supply of timber for the people of the United States. The bill is sponsored by the Forest Service and is supported by the National Forestry Program Committee which has been formed by manufacturers, consumers and converters of forest products to work for a policy which will mean an adequate and continuous supply of raw material. The Committee has secured agreement among the industries using the products of forests upon the measures proposed, as being fair to all concerned. Hearings will be arranged at which any points of issue will be clarified and Congress shown how vitally necessary a comprehensive forestry policy is to the industrial and public welfare of the nation.

Senator LaFollette Wants Information

Senator LaFollette on February 18 submitted to Congress two resolutions calling for a large amount of information from the Railroad Administration and the Interstate Commerce Commission on the subject of railroad expenses during the guaranty period and the efficiency and economy of railroad operation during the period of federal control, for which he asked immediate consideration. The resolutions were placed on the table because of an objection by Senator Townsend, who asked for opportunity to look them over.

The first resolution called for information concerning the charges that railroad companies have paid excessive prices for car and locomotive repair work in outside shops. The second resolution called upon the director general of railroads for information relative to improper conditions in shops, engine houses and repair yards, comparative efficiency of shop and engine house operation, all studies of maintenance of equipment made on the basis of the check of locomotive shop output and round house and shop costs, all information prepared and submitted to federal managers regarding maintenance of equipment during the test period; also during the seven years prior to the test period and during the year 1918, and, in general, all information gathered and tabulated by the administration relative to maintenance of equipment, as well as the equation factors for increased costs of

labor and material, to enable comparisons to be made as between the test period and the period of federal control.

Deficiency Appropriation for Valuation Work

Congress acted with unusual expedition on February 15 to pass a deficiency appropriation bill for $1,000,000 to carry on the railroad valuation work by the Interstate Commerce Commission during the balance of the fiscal year ending June 30, 1921, after it had been informed by Chairman Clark of the commission, the day before, that within 48 hours all of the funds available for the purpose would be exhausted and that if the appropriation were not put through at once it would be necessary to call in the men from the field. The commission had asked for the deficiency appropriation some time ago and it was provided for in the general deficiency bill, which has recently been passed by the House. The bill, however, required further consideration in the Senate and after it had been explained that the commission needed the money to meet its payroll on February 15 a special joint resolution for the $1,000,000 appropriation was introduced in the House and promptly passed, and shortly thereafter it was also passed in the Senate. The appropriation for $1,000,000 in the deficiency bill will be taken out of that bill in conference.

A. R. E. A. Program

The program for the twenty-second annual convention of the American Railway Engineering Association, which will be held in the Congress Hotel, Chicago, on March 15-17, is as follows:

TUESDAY, MARCH 15

President's address.
Reports of secretary and treasurer.
Reports of committees on:
- Signals and Interlocking.
- Ballast.
- Stresses in Railroad Track.
- Electricity.
- Track.
- Rail.
- Standardization.
- Uniform General Contract Forms.

WEDNESDAY, MARCH 16

- Signs, Fences and Crossings.
- Ties.
- Iron and Steel Structures.
- Water Service.
- Economics of Railway Labor.
- Economics of Railway Operation.
- Economics of Railway Location.
- Shops and Locomotive Terminals.
- Buildings.

Annual dinner at 6:30 p. m.

THURSDAY, MARCH 17

- Masonry.
- Roadway.
- Wood Preservation.
- Wooden Bridges and Trestles.
- Yards and Terminals.
- Rules and Organization.
- Records and Accounts.
- Conservation of Natural Resources.

New Business.
Election and installation of officers.
Adjournment.

Speakers at the annual dinner at the Congress Hotel will include John F. Wallace, consulting engineer, New York, and David Kinley, president, University of Illinois, Urbana.

Boost!

If you were working in a grocery store, wouldn't you make it a daily habit to let some person know what a good store you were working for? What good groceries were on sale there? What reasonable prices were asked? And generally how well customers were treated?

You can be just as enthusiastic about boosting for "M. & St. L." as you could for the best store. We have a first class railroad, but it can be made a much better road if each employee will do more to make it so. You can boost hard for it and you will be telling the truth when you do so. If you live at a competitive point, ask your merchants on what road they ship their goods or travel, and urge them to use "M. & St. L." Such a question and request, put when you are spending money, is bound to do great good and you will be sowing seed that is sure to bring forth a good harvest. You may be living at a non-competitive point; but "Talking M. & St. L." all the time, day in, day out, by employees, will do much to boost our gross receipts from which we all get our bread and butter, whether it be from non-competitive points or from competitive points. In reality, there is no such thing as a non-competitive point. Furthermore, the merchants you talk to in this way will have an added respect for "M. & St. L." and also more respect for you, as an employee who likes his job and his employer.—*E. E. Nash, general manager, Minneapolis & St. Louis.*

Mail Across Continent in 33 Hours

Postoffice department airplanes carried 300 lb. of mail from San Francisco to New York, about 2,700 miles, on February 22 and 23, in 33 hours 20 minutes, less than half the best time previously made, this being accomplished by keeping up the flying all night. The time actually on the wing was 25 hours 53 minutes. The record as given in press despatches is as follows:

SPECIAL AIRPLANE MAIL TRIP, FEBRUARY 22 AND 23

	Pac. time	E. time	Pilot
San Francisco, left Tuesday	4:30 a.m.	7:30 a.m.	.....
Reno	....	....	
Salt Lake	....	....	
Cheyenne	5:10 a.m.	8:10 p.m.	Knight.
North Platte	....	....	
Omaha	....	....	
Iowa City	....	....	
Chicago, arrived Wednesday	6:40 a.m.	9:40 a.m.	Webster.
Chicago, left	7:00 a.m.	10:00 a.m.	
Cleveland, arrived	10:52 a.m.	1:52 p.m.	
Cleveland, left	11:03 a.m.	2:03 p.m.	Allison.
Bellefonte	....	....	
New York	1:50 p.m.	4:50 p.m.	

The landings for fuel and refreshment at North Platte, Omaha and Iowa City, were made by the aid of flares marking the boundaries of the landing fields. Knight, the night flyer, steered his course of about 1,000 miles by compass. With the route from Omaha to Chicago, about 500 miles, he was wholly unacquainted.

These successful flyers were not the only ones who made the experiment on that day; westbound as well as eastbound trials were made; and one of the eastbound flyers, Capt. W. E. Lewis, was killed at Elko, Nevada.

National Railway Appliances Association Assigns Additional Exhibit Space

C. W. Kelley, secretary of the National Railway Appliances Association, has sent out the following list of exhibitors supplementing that published in the *Railway Age* of November 19 (page 897), and bringing the list of exhibitors up to date. There are now but four unassigned spaces and it is expected that these will be taken during the present week. The supplementary list is as follows:

American Radiator Company, Chicago.
American Malleable Castings Ass'n, Cleveland, Ohio.
Brown Hoisting Machinery Company, Chicago.
L. S. Brach Mfg. Company, Newark, N. J.
The Bassic Mfg. Company, Chicago.
Barrett-Cravens Company, Chicago.
Challenge Company, Batavia, Ill.
Detroit Steel Products Company, Detroit, Mich.
Duke Nut Lock Company, Chicago.
Elwell Parker Electric Company, Chicago.
Federal Electric Company, Chicago.
The Gosso Company, Chicago.
Howlett Construction Company, Moline, Ill.
Headley Good Roads Company, Philadelphia, Pa.
Leich Electric Company, Genca, Ill.
Lakewood Engineering Company, Cleveland, Ohio.
McGraw-Hill Publishing Company, New York.
National Surface Guard Company, Chicago.
Otley Paint Mfg. Company, Chicago.
Page Steel & Wire Company, Monessen, Pa.
Reading Specialties Company, Reading, Pa.
Geo. J. Roberts Company, Dayton, Ohio.
Stuebing Truck Company, Chicago.
Standard Asphalt & Refining Company, Chicago.
Train Control Appliance Company, El Paso, Texas.
Turner Day & Woolworth Handle Company, Louisville, Ky.

Medical and Surgical Section—A. R. A.

J. E. Fairbanks, general secretary of the American Railway Association, announces the establishment of a medical and surgical section in the Operating Division; and railroads, members of the association, are requested to send to him the names of their chief surgeons or other officers who may properly become members. It is proposed to have in the section the surgeon-general of the United States Public Health Service, and also a representa-

tive of the State and Territorial Health Officers' Association.

The temporary officers of the section are Dr. D. Z. Dunott, chief surgeon, Western Maryland, chairman; Dr. G. G. Dowdall, chief surgeon, Illinois Central, first vice-chairman, and Dr. Duncan Eve, chief surgeon, N. C. & St. L., second vice-chairman. These and the following twelve surgeons constitute the temporary committee of direction:

William B. Coley (N. Y. C.); Robert J. Graves (B. & M.); C. W. Hopkins (C. & N. W.); J. A. Hutchison (G. T. R.); A. W. Ide (N. P.); A. F. Jonas (U. P.); R. W. Knox (S. P.); J. P. Kaster (A., T. & S. F.); Southgate Leigh (Virginian); S. C. Plummer (C., R. I. & P.); J. B. Walker (Pennsylvania); H. S. Cumming, surgeon general, Bureau of the Public Health Service, Washington, D. C.

The temporary committee of direction has appointed three standing committees. On sanitary codes, Dr. R. W. Knox (S. P.), chairman; on physical standards, Dr. C. W. Hopkins (C. & N. W.), chairman; and on hospital standards, Dr. A. F. Jonas (U. P.), chairman.

Scale Men to Meet in Chicago

One added feature of engineering week in Chicago this year is the sixth annual meeting of the National Scale Men's Association which will be held at the Auditorium Hotel, Chicago, on March 15-17, inclusive. The program for this meeting, which is given below, consists largely of papers prepared by railway scale men. The annual dinner will be held Wednesday noon and all of Wednesday afternoon will be devoted to a visit to the National Railway Appliances exhibit.

TUESDAY MARCH 15

10:00 a. m.

Address of welcome by Joseph P. Griffin, president, Board of Trade of Chicago.

President's address by B. B. Gordon, general scale inspector, Pennsylvania System.

1:30 p. m.

Motor Truck Scales, by Charles B. Barackman, scale inspector, C. R. I. & P.

Address by William F. Cluett, chief deputy inspector, Department of Weights and Measures, City of Chicago.

Standards, by Dr. S. W. Stratton, director, United States Bureau of Standards.

Automatic Indicating Scales, by E. D. Gordon, sales engineer, General Automatic Scale Company.

Repairing Counter and Portable Scales, by A. R. McFarlane, scale inspector, C. B. & Q.

The Testing and Inspection of Industry-Owned Scales, by C. H. Mann, superintendent of scales, Southern Railway.

WEDNESDAY, MARCH 16

9:30 a. m.

The Scale Inspector's Relation to Scale Sales, by L. R. Boyer, sales engineer, Fairbanks, Morse & Co.

Official Supervision of Grain Weighing at Terminal Markets, by James T. Bradshaw, grain warehouse commissioner of Missouri.

Scales and Weighing from the Viewpoint of a Railroad Engineer, by R. Hayes, structural engineer, Southern Ry.

Weights and Weighing from a Freight Agent's Standpoint, by H. C. Howe, freight claim agent, C. & N. W.

Weights on Grain Shipments from the Standpoint of the Country Shipper, by George A. Wells, secretary, Western Grain Dealers' Association.

Scale Specifications and Requirements of Interstate Commerce Commission Docket 9009, by Henry L. Goemann, president, Goemann Grain Company.

Address by H. A. Foss, weighmaster, Chicago Board of Trade.

THURSDAY, MARCH 17

9:30 a. m.

Linear Measurements; the Basis of all Metrological Standards, by Charles C. Neale, the Measuregraph Company.

Address by A. B. Jacobus, president, Strait Scale Company.

The Present Status of the Grain Scale Situation, by C. A. Briggs, United States Bureau of Standards.

The Proper Use of Cement and Concrete, by Professor Duff A. Abrams, Structural Materials Research Laboratory.

Method of Computing Fibre Stresses, by H. O. Hem, consulting engineer, Toledo Scale Company.

Design of Weigh Bridges, by James L. Miller, engineer of bridges, N. Y. C.

Testing Mine Scales, by L. A. Fischer, United States Bureau of Standards.

1:30 p. m.

Testing Hopper Scales Under Normal Working Conditions as Compared with Results of Shut-Down Tests, by G. O. Aws, chief scale inspector, Missouri State Weighing Department.

Waterproof Decks for Railroad Track Scales, by John E. Armstrong, assistant engineer, Canadian Pacific.

Shop Treatment of Steel for Scale Pivots, by A. Malmstrom, chief scale inspector, A. T. & S. F.

Errors in Scale Weighing Beams, by W. E. Thompson, supervisor of scales, Minnesota Track and Hopper Scale Department.

Protecting Structural Steel Against Corrosion, by C. Pettis, general scale inspector, N. Y. C.

Waterproof Pits and Scale Drainage, by T. O. Dean, superintendent of scales, T. & P.

Address by R. C. Welsh, scale inspector, Pennsylvania System.

Traffic News

The St. Louis Southwestern will use the freight terminal facilities of the Illinois Central at Memphis, Tenn., effective February 28.

F. M. Elkinton was elected president of the Milwaukee Traffic Club at the annual meeting on February 4. J. G. Love was elected first vice-president; W. Bowersock, second vice-president; L. R. Conger, third vice-president; and R. S. Dahl, secretary and treasurer.

The eighteenth annual dinner of the Transportation Club of Detroit was held at the Hotel Statler, in that city, on February 24. The speakers included Charles F. Moore, of New York, who spoke on "Dollars and Sense," and George A. Matthews, whose subject was "The Invisible Line."

The Erie Railroad has inaugurated a foreign trade service for the benefit of shippers and will publish regularly foreign trade bulletins dealing with the foreign ports and their facilities. The second number, just published, contains a very complete and detailed account of the port of Cardiff, Wales.

Senator Fletcher of Florida has introduced in the Senate a resolution requesting the Interstate Commerce Commission to furnish to the Senate full information regarding all traffic agreements, arrangements or understandings between the eastern trunk line railroads and the foreign flag steamship lines.

The State of New York, which entered suit in the Federal Court to enjoin the increases in intrastate fares and freight rates recently ordered by the Interstate Commerce Commission, was defeated, the decision, handed down at Utica on February 22, by Judges Manton, Ray and Hazel, being in favor of the federal authorities on all points. The attorney general of the state proposes to appeal without delay to the Supreme Court of the United States.

Senator Kenyon of Iowa has introduced in the Senate a bill to amend the Transportation Act so as to provide that the rate-making provisions in section 15-a authorizing the Interstate Commerce Commission to fix rates calculated to afford a return of 5½ or 6 per cent shall not apply to intrastate traffic. The bill says that "the commission shall have no power to fix or adjust rates, passenger or freight, which are within a state, and such power to fix or regulate intrastate rates is hereby conferred entirely upon the respective states."

A Shippers' Service Association has been organized at St. Louis, Mo., with offices in the Victoria building, by I. L. Burlingame, for many years general manager of the Terminal Railroad Association of St. Louis, as president, and W. E. McGarry, who was associated with Mr. Burlingame, and later connected with the American Railroad Association, Car Service Division, as chairman of the St. Louis district. Mr. McGarry will act as vice-president and general manager of the association, which has been organized to furnish service in traffic and transportation problems.

The Traffic Club of Denver

A new organization, the Traffic Club of Denver (Colorado), was put in operation at a meeting at the Metropole Hotel in that city on February 16. It is composed of prominent railroad and commercial traffic men and meets a general need which has been felt for some time. The following officers and directors were elected: President, J. F. Vallery (C. B. & Q.); first vice-president, F. B. Choate (U. P.); second vice-president, Harry Dickinson (Civic Association); secretary, C. B. Rader (Denver Grain Exchange). Directors: Fred Wild (D. & R. G.); L. P. Banks (S. P.); Geo. W. Martin (C. R. Q. & P.); F. W. Myers (A. T. & S. F.); M. H. McEwen (C. M. & St. P.); Ashley Paynor (I. & G. N.); T. J. Toner (D. & S. L.); Mr. Flickinger (Morey Merc. Co.); H. G. Naylor (Midwest Oil Co.); F. M. Andrews (Denver Dry Goods Co.); G. W. Work (Colo. M. & E. Co.); and the officers above named.

Commission and Court News

Interstate Commerce Commission

The commission has rendered its decision in the North Carolina intrastate rate case ordering increases by percentages corresponding to those authorized for interstate traffic in Ex Parte 74.

The commission is to investigate the action of the Alabama Public Service Commission in denying the carriers' request for permission to establish a surcharge of 50 per cent on intrastate passengers in Alabama.

The commission has suspended until June 20 the operation of certain schedules appearing in a Hocking Valley tariff which propose reductions in the amount of switching charges that will be assumed by the railway company at Toledo, Ohio.

The commission has suspended until June 23 the operation of certain schedules shown in Agent E. B. Boyd's tariff, which propose increased rates on pig iron from points in Alabama, Georgia, Kentucky, Louisiana, Tennessee and Virginia to Ogden and Salt Lake City, Utah, and points taking same rates.

The Interstate Commerce Commission has issued its decision in the Utah intrastate rate case ordering an increase in the intrastate passenger fares by the amount of the increases applied to interstate traffic to correct discrimination against interstate commerce. The present intrastate rates on coal and on ore were not found unreasonable, preferential, prejudicial or discriminatory.

The Interstate Commerce Commission has suspended from February 15 until June 15, 1921, the operation of certain schedules which propose to increase the rates on various commodities from points in the Mountain-Pacific territory in Colorado, New Mexico and Wyoming to El Paso, Texas, and related points located in the Western group from 25 and 33⅓ per cent to 35 per cent over rates in effect August 25, 1920.

The Interstate Commerce Commission has prescribed the following instructions as the second paragraph of section 2, of the general instructions on page 9 of the Classification of Investment in Road and Equipment of Steam Roads, Issue of 1914: "If the total cost of additions and betterments to any class of equipment, or any class of fixed improvements (except additional, or extension of, tracks), under a general plan, considered as a whole, is less than $100, the amount expended shall be charged to the appropriate account in operating expenses. This rule is not to be construed as authorizing the parceling of expenditures in order to bring them within this limit.

The Interstate Commerce Commission has issued a notice to shippers calling attention to the fact that Section 206-c of the transportation act provides that complaints praying for reparation on account of damage claimed to have been caused by reason of the collection or enforcement during the period of federal control of unreasonable rates or rates otherwise in violation of the interstate commerce act may be filed with the commission within one year after the termination of federal control. The commission says it is not vested with jurisdiction to consider claims for reparation filed after the expiration of that time and that notification to the commission that a complaint may or will be filed later for the recovery of damages is not a filing of complaint within the meaning of the statute.

State Commissions

The State Senate of Colorado has passed a bill repealing the law which created the State Railroad Commission and the measure has been sent to the House.

The Public Service Commission of the State of Kansas has continued all railroad rate cases for a period of six months from March 1. This means that there will be no change in existing intrastate rates prior to next September.

Foreign Railway News

Electrification in South Africa

The South African Railways are advertising in the United States for bids for materials to be used in the electrification of their lines between Capetown and Simonstown and between Durban and Pietermaritzburg. The following materials will be needed for the Capetown project: Motor coaches and underframes, motor bogies, electrical equipment for coaches, substation equipment and power station transformers, boilers and boiler house equipment, turbo-alternators and condensing plant. For the work at Durban the following materials are desired: Electric passenger and freight locomotives, electric switching locomotives, substation equipment, boilers and boiler house equipment, turbo-alternators, condensing plant and transformers for substations and power stations. It is understood that the Capetown project is a multiple unit proposition and the one at Durban primarily to secure cheaper operation on heavy grades.

Specifications can be obtained from the High Commissioner for the Union of South Africa, 32 Victoria street, S. W. 1, London, England. The charge for these is £5 5s. for the first copy and £2 2s. for additional copies. Sums expended for these specifications up to three will be refunded upon receipt of bona-fide bids. Bids will be received by the High Commissioner at London up to May 3. It is understood that the total cost of the work will exceed $20,000,000.

Plans for Spanish Cars Received

Specifications for freight and passenger cars, of which the Spanish government intends to order a large number, have been received by the Bureau of Foreign and Domestic Commerce and are on file at the Custom House, New York. Bids for this equipment opened in Madrid beginning February 14, 1921.

Car Exports in December

Passenger cars exported in December totaled 32, valued at $258,451—the highest figure for any month of the year. Freight car exports were 1,611, valued at $2,267,660, showing a considerable improvement over the figures for each of the two preceding months. Cuba was the destination of 865 of these cars, while 300 were sent to the Philippine Islands. The detailed figures by countries as compiled by the Bureau of Foreign and Domestic Commerce follow:

Countries	Passenger		Freight and other		Parts of cars,
	No.	Dollars	No.	Dollars	Dollars
France	..	.....	...	.....	425,607
Italy	..	.....	...	.....	7,416
Poland and Danzig	..	.....	100	400,000	.....
Spain	..	.....	...	.....	9,665
England	..	.....	...	.....	3,309
Scotland	..	.....	...	.....	4,575
Canada	1	2,391	12	4,200	125,365
Costa Rica	..	.....	...	.....	532
Guatemala	..	.....	...	.....	638
Honduras	..	.....	...	.....	340
Nicaragua	..	.....	...	.....	454
Panama	..	.....	...	.....	309
Salvador	..	.....	...	.....	1,101
Mexico	10	20,000	109	135,993	26,143
Jamaica	..	.....	...	.....	749
Trinidad and Tobago	..	.....	...	.....	21
Cuba	14	155,871	865	1,295,707	238,237
Dominican Republic	..	.....	94	189,926	1,166
Argentina	..	.....	...	.....	268
Bolivia	..	.....	1	1,595	406
Brazil	..	.....	28	29,070	10,977
Chile	..	.....	...	.....	.....
Colombia	6	68,919	1	8,865	19,273
Peru	..	.....	25	2,818	11,254
Uruguay	..	.....	...	.....	1,883
Venezuela	1	11,270	...	.....	.....
China	..	.....	3	12,450	18,684
Kwantung, leased territory	..	.....	...	.....	7,557
British India	..	.....	...	.....	4,232
Other British East Indies	..	.....	...	.....	.....
Dutch East Indies	..	.....	...	.....	11,565
Hongkong	..	.....	...	.....	50
Japan	..	.....	...	.....	53,054
Australia	..	.....	...	.....	712
New Zealand	..	.....	...	.....	2,686
Philippine Islands	..	.....	300	92,325	27,794
British South Africa	..	.....	73	94,711	5,375
Total	32	258,451	1,611	2,267,660	1,021,397

December Exports of Car Wheels and Axles

Exports of car wheels and axles in December totaled $631,999 in value. The largest shipments during the month were to Spain. These exports were valued at $201,546. The figures, by countries, as compiled by the Bureau of Foreign and Domestic Commerce, follow:

Countries	Dollars
Belgium	3,203
Spain	201,546
England	2,595
Canada	93,671
Costa Rica	1,026
Guatemala	2,737
Honduras	1,330
Fanama	200
Mexico	76,086
Jamaica	2,278
Trinidad and Tobago	108
Other British West Indies	400
Cuba	83,837
Dutch West Indies	14
Dominican Republic	886
Argentina	4,941
Bolivia	460
Brazil	3,296
Chile	48,787
Colombia	3,567
Ecuador	512
Peru	9,767
China	11,318
Kwantung	8,207
British India	7,541
Japan	50,904
New Zealand	537
Other British Oceania	28
Philippines	12,121
British South Africa	96
Total	631,999

December Exports of Track Material

Spikes weighing 3,158,612 lb. and valued at $143,177 were exported during December. Cuba was the destination of by far the largest shipments of this material. Rails valued at $3,324,802 and weighing 52,986 tons were the month's totals. The exports of switches, frogs, splice bars, etc., were valued at $784,108. The detailed figures, by countries, as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce, follow:

Countries	Spikes		Steel rails		Switches frogs, splice bars, etc.
	Pounds	Dollars	Tons	Dollars	Dollars
Denmark	.....	.....	119	7,497	959
Finland	.....	.....	197	13,748	.....
France	.....	.....	72	4,896	3,174
Netherlands	.....	.....	48	2,618	920
Norway	.....	.....	330	23,086	857
Portugal	.....	.....	270	17,509	578
Spain	.....	.....	872	53,423	6,469
England	.....	.....	3,909	274,570	7,098
Scotland	.....	.....	265	14,180	14,854
British Honduras	.....	.....	.....	.....	40
Canada	65,560	3,683	719	31,309	43,744
Costa Rica	2,000	193	.....	.....	2,406
Guatemala	40,000	2,280	.....	.....	8,967
Honduras	110,700	5,120	1,172	75,689	42,278
Panama	755	36	152	9,291	3,300
Salvador	83,260	2,173	1,116	68,548	4,454
Greenland	.....	.....	.....	.....	28,710
Mexico	206,364	11,631	1,305	87,593	.....
Newfoundland and Labrador	10,000	600	.....	.....	.....
Jamaica	.....	.....	.....	.....	7,098
Trinidad and Tobago	.....	.....	11	976	528
Cuba	1,238,980	42,520	5,884	345,835	192,473
French West Indies	.....	.....	26	1,851	.....
Haiti	.....	.....	.....	.....	2,160
Dominican Republic	21,200	1,161	350	22,881	20,472
Argentina	.....	.....	.....	.....	80
Brazil	362,472	17,062	2,211	149,358	91,821
Chile	26,650	1,351	2,534	178,475	80,770
Colombia	6,000	396	2,001	112,926	15,665
Ecuador	1,800	132	503	37,038	784
British Guiana	32,000	2,070	101	6,251	1,615
Dutch Guiana	.....	.....	150	9,328	355
Peru	123,772	8,183	1,973	125,491	25,481
Venezuela	.....	.....	.....	.....	1,483
China	118,221	5,222	3,565	229,046	13,369
Kwantung	.....	.....	4,712	234,602	.....
British India	.....	.....	330	19,412	4,426
Ireland	.....	.....	.....	.....	10,468
Straits Settlements	500	51	31	1,320	219
Dutch East Indies	270,546	17,084	6,738	451,754	38,145
Japan	249,862	11,704	3,466	201,537	30,502
Australia	.....	.....	.....	.....	3,695
Other British Oceania	.....	.....	.....	.....	2,812
Philippine Islands	187,970	10,525	1,481	106,741	62,265
British South Africa	.....	.....	4,167	273,061	6,228
British East Africa	.....	.....	175	13,384	330
French Africa	.....	.....	1,669	90,126	.....
Portuguese Africa	.....	.....	362	27,452	2,086
Total	3,158,612	143,177	52,986	3,324,802	784,108

Equipment and Supplies

Locomotives

THE NEW JERSEY, INDIANA & ILLINOIS is inquiring for some Mogul type locomotives.

THE OLIVER IRON MINING COMPANY, Duluth, Minn., is asking for prices on 12 locomotives.

THE MEXICO & NORTH WESTERN is inquiring for some 2-6-6-2 type and some 2-8-0 type locomotives.

CERRO DE PASCO RAILWAY (Peru) is inquiring through the locomotive builders for one Mikado type locomotive.

THE UNITED FRUIT COMPANY, New York, has ordered 2 Forney type locomotives from the Porter Locomotive Works. The locomotives will have a total weight of about 12 tons and will be used on the Truxillo Railroad, Honduras.

Freight Cars

THE ATCHISON, TOPEKA & SANTA FE is inquiring for 1,000 50-ton gondola cars.

THE BANGOR & AROOSTOOK has ordered 30 ballast cars from the Rodger Ballast Car Company.

THE LOUISIANA & ARKANSAS has ordered 25 Hart convertible dump cars from the American Car & Foundry Company.

THE ERIE is having general repairs made to 300 50-ton all-steel gondola cars, at the shops of the Greenville Steel Car Company, Greenville, Pa.

Passenger Cars

THE ANN ARBOR has revived its inquiry for 2 combination smoking and mail cars and 4 passenger coaches.

THE NORTHERN PACIFIC is inquiring for 22 coaches, 12 dining cars, 12 70-ft. baggage cars, 5 combination mail and express cars and 11 combination baggage and express cars.

Iron and Steel

THE ATLANTIC COAST LINE is inquiring for 3,000 tons of rails.

THE MISSOURI PACIFIC has ordered 150 tons of plate girder spans from the American Bridge Company.

Miscellaneous

THE ATCHISON, TOPEKA & SANTA FE is inquiring for 1,000 rolled steel car wheels, 36 in. in diameter.

Trade Publications

MACHINE TOOLS.—George Swift & Sons, Halifax, England, have issued a general catalogue of machine tools, illustrating and describing the line of radial drills, lathes, slotters, shapers and planers which are included in the regular line manufactured by this company.

LOCOMOTIVE CRANES.—A catalogue of detailed parts of Brownhoist locomotive cranes has recently been issued by the Brown Hoisting Machinery Company, Cleveland, Ohio. All the parts are shown in photographs in which each detail is clearly numbered to facilitate identification for ordering. The book also contains illustrated directions for erecting and operating these locomotive cranes.

Supply Trade News

The general offices of **The Watson Engineering Company** have been changed from 1101 Hippodrome building, to 4614 Prospect avenue, Cleveland, Ohio.

S. D. Inman, who has been associated with the Conveyors Corporation of America, Chicago, has been placed in charge of the engineering and design of its American trolley carrier monorail conveying equipment.

Frank P. McCaughey, a member of the firm of **McCaughey Brothers,** railroad contractors, died suddenly at his home in Chicago on February 4. Mr. McCaughey entered the railroad contracting field with his two brothers John J. and Patrick E., in 1882.

Max Grant, whose appointment as manager of technical railway sales of the **Glidden Company,** Cleveland, Ohio, was announced in the *Railway Age* of February 18, was born in Berlin, Germany, in 1876. After serving for three years in the paint business in Germany he came to America in 1896, and went to the Devoe-Raynolds Company, serving first at Chicago and then at New York. About five years later he was appointed superintendent and later became manager of the Canton Paint & Varnish Company, Canton, Ohio. In 1910, he was appointed manager of the railroad paint department of the Wrinkle Paint Manufacturing Company, Columbus, Ohio, and since 1915, was manager of the railway paint department of the Tropical Paint & Oil Company, Cleveland, until his recent appointment as manager of technical railway sales of the Glidden Company with headquarters at Cleveland.

M. Grant

Robert P. Sanborn has been appointed manager of the traction department of the **Edison Storage Battery Company,** Orange, N. J. He previously served for several years in the power and mining department of the General Electrical Company, Erie works, Erie, Pa.

The **Federal Engineering Company** has just been organized to specialize in railway plumbing, heating and power plant work. The headquarters of the new firm are at 3240 S. Michigan Boulevard, Chicago, and the company will maintain a branch office at Kansas City, Mo.

The Commonwealth Steel Company, St. Louis, Mo., has recently established an employee's benefit association, which provides insurance against sickness, accident or death for the employees. The company has offered to each member of its force a life insurance policy, varying in amounts from $500 to $2,000, depending on the length of service.

Harry A. Pastre of the **Elliott Company,** Jeannette, Pa., has been appointed manager of a special railroad department. Mr. Pastre for some time has had charge of the company's relations with the railroads and the development of products specially designed for railroad work. The Elliott Company controls the Lagonda Manufacturing Company of Springfield, Ohio, and the Liberty Manufacturing Company of Pittsburgh, both makers of arch tube cleaners.

The Hazard Manufacturing Company, Wilkes-Barre, Pa., manufacturers of wire rope and electrical wires and cables, on February 1 opened a new sales office and warehouse at 1701-1703 First avenue, Birmingham, Ala., in charge of **R. J. Bravand,** district manager. Mr. Bravand has been with the Hazard Manufacturing Company for 22 years.

N. C. Hoyles, C. E., has been appointed manager of the Cincinnati, Ohio, branch of the **Pittsburgh Testing Laboratory,** Pittsburgh, Pa. From 1909 to 1914, Mr. Hoyles was manager of the Birmingham, Ala., branch of this company. In 1914, he joined the Canadian military forces, went overseas with the Canadian engineers, and at the close of the war was mustered out with the rank of Lieutenant-Colonel. For the past year, he has been assistant manager of the Pittsburgh Testing Laboratory's New York office.

A bulletin issued by the Bureau of Labor Statistics of the United States Department of Labor on employment in selected industries in January, 1921, summarizes reports from 46 car building and repairing establishments which in January, 1921, had on their payrolls 44,613 employees, or 5½ per cent less than for January, 1920. The amount of the payroll in January, 1921, however, was $3,125,082, or 9.6 per cent greater than that for January, 1920. A similar comparison for January, 1921, and December, 1920, is given for 45 establishments, which shows a decrease of 12.4 per cent in the number of employees on the payroll and a decrease of 20.2 per cent in the amount of the payroll. The bulletin states that the industry reports that in order to reduce expenses and on account of the general business conditions the number of employees was reduced. The per capita earnings for the period in January were 8.9 per cent lower than for the December payroll period.

Obituary

Charles B. Schoenmehl

Charles B. Schoenmehl, president and treasurer of the **Waterbury Battery Company,** Waterbury, Conn., who died on February 14, at his home in Waterbury, as was noted in the *Railway Age* of February 18, was born in New York City in November, 1858. At the age of 15 he entered the employ of the Benedict & Burnham Company and afterward went to the Waterbury Brass Company in the tube rolling department. During his employment with the latter company he first took up the study of electro-chemistry.

C. B. Schoenmehl

He commenced experimenting with electric batteries in the early eighties; his first attempt to market a battery was about 1884, while in the employ of the Waterbury Brass Company, when he made and sold to physicians in and about Waterbury batteries for use with medical coils. These batteries were made by him at night after his day's work in the brass company. In 1886, he developed a new type of open circuit cells, and about this time he began taking out patents covering batteries in general. The first type of battery marketed under a trade name was Victor cell.

In 1896, the Excelsior cell was placed on the market, this was of the cylindrical type and was based upon patents which were kept more or less active by additional combination and improvement patents. Up to 1896, he did all the work of manufacturing and selling his battery product himself, still producing at night such batteries as were sold, and

retaining his employment in the Waterbury Brass Company.

The Waterbury Battery Company was organized in 1898 with a few hundred dollars Mr. Schoenmehl had borrowed to start operations. Subsequently he secured additional finances from a friend but this was all repaid later from the profits of the company's business. The company started operation with one employee, and its manufacturing plant consisted of a small building 20 ft. by 30 ft.

The first product of the company was the Excelsior battery. In 1904, a new compressed cylinder type of copper oxide cell was presented to the trade under the trade name of Schoenmehl's primary battery. This type, in modified form, is still being sold in large quantities, and the present Unit cylinder type of cell now being featured by the company is the further development of this original cylinder type. In 1906, the company placed upon the market a plate type of battery. This type, with certain modifications, also a high internal resistance or track circuit type of primary battery produced in 1912, are still being made in large quantities.

During 1912, Mr. Schoenmehl put out his multiple plate type element and the same year he acquired the business and plant of the Gordon Primary Battery Company. In the acquisition of this business, he obtained all the patents covering the Gordon battery to which he subsequently added combination and improvement patents.

Mr. Schoenmehl was a prolific inventor. Since the organization of The Waterbury Battery Company he has invented and patented in the United States and Canada a great many improvements in primary batteries as well as other devices including patents covering the electro-deposition of metals, and he originated and devised the method of electro deposition of copper now in use in some of the great mining centers of the West. Altogether Mr. Schoenmehl has taken out upward of 60 patents in the United States.

Arthur H. Johnson

Arthur H. Johnson, for many years signal and telegraph superintendent of the London & South Western, and formerly well known in America, died in England on January 23. He had retired from active service in 1918 because of failing health. He was the eldest son of Henry Johnson, also prominent in former years in the signaling field in this country, and brother of Sidney G. Johnson. His first railroad service was on the Lancashire & Yorkshire. He lived in this country about twelve years and was connected with the Union Switch & Signal Company, the Johnson Railroad Signal Company and later with the Standard Signal Company; and he designed the Johnson interlocking machine. For about two years he was signal engineer of the Erie Railroad.

When he returned to England some 23 years ago he joined W. R. Sykes, the inventor of controlled manual signaling apparatus. He married at that time Mr. Sykes' daughter. A couple of years later he went to New Zealand, for the government railways, as signal and telegraph superintendent, spending several years there, establishing for the New Zealand Railways a signal and telegraph department. All this was before he entered the service of the London & South Western, which was about 1903.

He was the author of a valuable sketch of the history of railroad signaling which was published in the *Railroad Gazette* in August, September and October, 1894.

Mr. Johnson is survived by his wife, two sons and two daughters. His eldest son, Clive, now 21 years old, served with the army in France, during the latter part of the war, as lieutenant in the British Regulars.

RAILROAD OFFICERS should be thoughtful of everyone, think of others' requirements and consider what other people will think of them. They should give their subordinates as much consideration as they expect their subordinates to give them. No one can afford to talk or write in a domineering or angry way. During the past few years there has been a noticeable lack of thoughtfulness, not only for the railroad, but also for the public. Conditions have been so free and easy that about all any railroad man thought about was how much wages he could get.—*E. E. Nash.*

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This company contemplates the construction of a bridge across the Iowa river about 20 miles west of Fort Madison, Ia., to cost approximately $250,000.

ESQUIMALT & NANAIMO.—This company has awarded a contract to the Foundation Company of British Columbia for the construction of a line from Port Alberni, B. C., to Great Central Lake, a distance of 10½ miles. The work will include the erection of one steel lattice girder span with a 150 ft. deck on concrete piers and four frame trestles and will cost approximately $480,000.

ILLINOIS CENTRAL.—This company contemplates extensions to its roundhouses at Dubuque, Ia., Waterloo, Ia., and Freeport, Ill., to handle new and heavier equipment which is now being delivered.

ILLINOIS CENTRAL.—This company contemplates the construction of a viaduct 700 ft. long and 36 ft. high, carrying McLemore avenue over South Yards, Memphis, Tenn.

LIVE OAK, PERRY & GULF.—This company has begun the reconstruction of its blacksmith and car shops at Live Oak, Fla. The buildings will be of frame construction, 50 ft. by 60 ft. and 60 ft. by 150 ft., respectively. The following new machinery will be purchased: a plane, a shaper, a drill press and a wheel press.

LOUISVILLE & NASHVILLE.—This company has awarded a contract to H. W. Hancock, Louisville, Ky., for the construction of a roundhouse and shops at Loyall, Ky., at an approximate cost of $150,000.

MISSOURI, KANSAS & TEXAS.—This company has awarded a contract to T. H. Johnson, Sedalia, Mo., for the construction of a one-story brick passenger station at North Jefferson, Mo. This building will replace a frame structure destroyed by fire and will be 21 ft. by 60 ft. and will cost approximately $13,000.

MT. STREETER.—This company has awarded a contract to the James V. Stryker Construction Company, Denver, Col., for the construction of a line from Meeker, Col., through Mt. Streeter and Craig to Wamsutter, Wyo., a distance of 150 miles. The project will cost approximately $10,000,000 and will require three years for completion.

SOUTHERN PACIFIC.—This company which was noted in the *Railway Age* of February 11 (page 391) as having been ordered by the California Railroad Commission to build a new station at Oakland, Cal., is asking a rehearing of the case, stating that an Oakland syndicate will build a six-story office building including station facilities on the station site under a 50-year lease.

WESTERN PACIFIC.—On the application of this company for a certificate of public convenience and necessity authorizing the construction of a branch line 1.75 miles in length in Butte County, Cal., the Interstate Commerce Commission holds that the line in question, which is to be built for the sole purpose of serving a tract of timber, will be a spur track within the meaning of paragraph 22, section 1, of the interstate commerce act and a certificate is not required.

THE GOVERNMENT owes the railroads $350,000,000, but won't pay. Yet some people like the government's business methods so much that they would have the government own and operate the railroads and almost everything else.—*Forbes Magazine.*

MAKING FRIENDS.—We want to make our relations to the public uniformly courteous and efficient. Doubtless there are times when it would be easier to be curt than courteous. But the easier course is by no means always the better. Difficulties merely make a given task more worthy of accomplishment. Good service depends not only on what you do, but upon the way you do it. That is true of all work. Whatever satisfies or pleases a patron is good service. Whatever dissatisfies or displeases a patron is, in most cases, bad service. Has the thing been done right? This is always the final test.—*E. E. Nash, general manager, Minneapolis & St. Louis.*

Railway Financial News

ANN ARBOR.—*Asks Authority to Repledge Bonds*—This company has applied to the Interstate Commerce Commission for authority to repledge from time to time $700,000 of its improvement and extension mortgage bonds.

BALTIMORE & OHIO.—*Asks Authority for Bond Issue.*—This company has applied to the Interstate Commerce Commission for authority to nominally issue $2,782,000 of its refunding and general mortgage bonds and to issue bonds of certain subsidiaries to be pledged as further security under the refunding and general mortgage and to use the bonds as collateral security.

CANADIAN PACIFIC.—*Leases Railway.*—Application will be made to the Board of Railway Commissioners for Canada, on March 8, for the approval of a 99-year lease from July 1, 1920, of the Nakusp & Slocan Railway.

CHICAGO, MILWAUKEE & ST. PAUL.—*New Director.*—Burton Hanson has been elected a director.

CHICAGO & NORTH WESTERN.—*Asks Authority to Issue Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue and pledge $15,000,000 of general mortgage 5 per cent gold bonds under its mortgage of 1987 for the purpose of exchanging, retiring, refunding or paying certain existing bonds reserved for in the mortgage of 1987, maturing April 1 and May 1, 1921. The company also asks authority to execute a trust indenture and to pledge thereunder the $15,000,000 and also $3,000,000 of general mortgage gold bonds now in its treasury and for authority to issue and sell $15,000,000 of 6½ per cent secured gold bonds dated March 1, 1921, and maturing March 1, 1936, for the purpose of facilitating the retirement and refunding of the existing bonds. The latter bonds have been sold to Kuhn, Loeb & Company, subject to the approval of the commission, on a basis of 95.40.

CHICAGO & WESTERN INDIANA.—*Asks Authority to Issue Bonds.*—Application has been made to the Interstate Commerce Commission for authority to issue $130,000 of its consolidated mortgage 4 per cent bonds, dated September 1, 1920, to retire and refund a like amount of general mortgage 6 per cent bonds.

CLEVELAND UNION TERMINALS COMPANY.—*New York Central Asks Authority to Purchase Stock.*—The New York Central, the Cleveland, Cincinnati, Chicago & St. Louis, and the New York, Chicago & St. Louis have applied to the Interstate Commerce Commission for authority to purchase the stock of this company for $10,000 and an order approving the grant by it to the New York Central and other companies of the right to use for 999 years the passenger station and approaches proposed to be constructed by the company in Cleveland, on the southwest corner of the Public Square, in accordance with a city ordinance. It is stated that the company has prepared plans for the station which, with land, approaches, etc., is estimated to cost about $60,000,000. The railroads propose to enter into an agreement with the terminals company providing for the acquisition of the necessary lands and for the construction of the terminal by the sale of first mortgage gold bonds of the terminals company to be issued in series, each series maturing in 50 years and to be guaranteed by the separate railroads. The bonds are to be convertible into cumulative, preferred stock and the first series proposed is for $6,000,000 but authority for the bond issue has not yet been requested.

COLLINS & LUDOWICI.—*Sale.*—The sale of this road, about 46 miles in length (formerly part of the Georgia Coast & Piedmont, abandoned in 1919), at public auction at Reidsville, Ga., on February 1, for $70,000, has been confirmed by Judge Shepherd of the Superior Court of Tattnall County, Georgia. Half of the road was bought by L. Metzger & Co., of Mobile, Ala., and half by W. A. Dubberty and John D. Bradley, of Glenville, Ga. Efforts, it is said, are being made to save the road from being junked.

DAYTON, TOLEDO & CHICAGO.—*Sale.*—This road has been sold by John Ringling to W. H. Ogborn, of Chicago, and a group of associates. Mr. Ogborn will become president of the road, which runs from Dayton, Ohio, to Delphos, 95 miles.

DELAWARE, LACKAWANNA & WESTERN.—*Net Operating Income Declines.*—The statement of the 1920 operations submitted to the stockholders at their annual meeting on February 23 showed a net operating income of $6,104,886, a decrease of $5,842,478 from the preceding year's net. The chief items in the company's financial report are given in the following table:

	1920	1919
Revenues:		
Transportation of coal	$20,228,484	$19,055,523
Transportation of merchandise	40,132,599	32,839,878
Transportation of passengers	13,868,517	12,380,787
Total revenues	83,340,062	71,824,047
Expenses:		
Maintenance of way and structures	10,178,887	7,682,365
Maintenance of equipment	19,508,625	15,132,815
Transportation expenses	40,165,381	30,661,441
Net railway operating income	6,104,886	11,947,364

GULF, TEXAS & WESTERN.—*Receivership.*—It is reported that W. F. Knox, secretary and treasurer, has been appointed receiver. The road operates between Jacksboro, Tex., and Salesville, 130 miles.

INDIANA HARBOR BELT.—*Authorized to Issue Note.*—The Interstate Commerce Commission has authorized this company to issue a promissory note for $23,020 at 6 per cent in renewal of a note for the payment of land at Hammond, Ind.

INTERNATIONAL & GREAT NORTHERN.—*Loan Approved.*—The Interstate Commerce Commission has approved a loan of $260,750 to aid this company in providing itself with new equipment and additions and betterments to way and structures at a total estimated cost of $521,500. The company itself is required to finance an equal amount to meet the loan of the government.

KNOXVILLE, SEVIERVILLE & EASTERN.—*Receivership.*—Col. S. E. Cleage has been appointed receiver on the petition of the Mechanics Bank & Trust Company, as trustees of the bondholders.

LOUISVILLE & NASHVILLE.—*Asks Authority to Pledge Stock and Bonds.*—This company has applied to the Interstate Commerce Commission for authority to pledge from time to time $22,164,000 of bonds and $4,126,025 of stock in its treasury as collateral for proposed loans on short term notes, including a proposed loan of $4,500,000 from J. P. Morgan & Co. evidenced by short term notes.

MINNEAPOLIS & ST. LOUIS.—*Asks Authority to Issue Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $2,096,000 of its refunding and extension mortgage 5 per cent bonds, of which $1,382,000 is to pay at maturity an equal amount of first mortgage 6 per cent bonds maturing April 1 and the balance is to be issued against instalment payments on various equipment obligations.

MISSOURI-ILLINOIS RAILWAY.—*Illinois Southern taken over.*—This road has been organized under the laws of Missouri to take over and operate the property formerly owned by the Illinois Southern Railway, has secured a franchise to do business in Illinois, and has consummated the purchase of the Illinois Southern property. The Missouri-Illinois, which is now in possession of the property, plans to resume operation of the road at the earliest possible time. The company has established its general offices at Bonne Terre, Mo.

MISSOURI PACIFIC.—*Authorized to Issue Equipment Trusts.*—This company has been given authority by the Interstate Commerce Commission for the issuance of $1,836,000 of equipment trust certificates at 6½ per cent for the acquisition of 25 Mikado locomotives, 15 switching locomotives and 10 passenger locomotives at a total estimated cost of $3,076,000.

NEW YORK CENTRAL.—*Asks Authority to Purchase Stock.*—See Cleveland Union Terminals Company.

NORTHERN PACIFIC.—*New Director.*—Stephen Birch has been elected a director.

NORFOLK SOUTHERN.—*Final Payment of Guaranty.*—The Treasury Department announces that it has paid to this company $1,311,700.63 on a certificate of the Interstate Commerce Commission for final payment of the guaranty under section 209 of the transportation act, for the six months' period following the termination of federal control.

READING.—*Preferred Protective Committee Approves Plan.*—The committee for the protection of the holders of first and second preferred stock, through its chairman, Adrian Iselin, has issued a notice to stockholders saying the dissolution plan filed with the court meets its approval.

"It provides," says the notice, "for equitable and just treatment of the preferred stockholders, as it deals with the preferred stock on the same basis as the common issue. Nevertheless, it has been considered desirable that the committee should be at the hearing in support of the plan before the court, in order to be prepared to oppose any modifications that may be adverse to the interests of the preferred stockholders."

The hearing on it is set for March 1.

The Reading dissolution plan was abstracted in last week's issue of the *Railway Age*, page 425.

SOUTHEASTERN EXPRESS COMPANY.—*Capital Stock Oversubscribed.*—The capital stock of this company, consisting of 10,000 shares each of $100 par value, was offered to the public on February 17, and was oversubscribed. The Southeastern Express Company was incorporated in Alabama on October 6, 1920. Fairfax Harrison, president of the Southern Railway, in an announcement dated February 18, said:

"The books for subscription to the million dollars of capital stock offered to the people of the South by the Southeastern Express Company were opened yesterday morning and were closed at night. The stock was allotted proportionately to all the 14 states served by the lines of Southern Railway System and the Mobile & Ohio Railroad. The reports received this morning show over-subscription in every state.

"The stock list will be made up of the names of at least 2,500 widely distributed Southern business men holding on the average about four shares apiece. No single subscription in excess of 100 shares was received and no officer or employee of the railroad was permitted to participate, although many of them, especially the employees, offered to subscribe.

"This result of a test of practical business democracy and individualism in the South at a time of business depression is of course gratifying to us, but has perhaps a larger significance. Certainly it fully justifies our confidence that the people of the South desire competition in express service and are willing to back their desire with their money and their support in other respects.

"The Southeastern Express Company will now proceed under the able management of its president, John B. Hockaday, to purchase its necessary equipment and will begin service at the earliest practicable moment, of which announcement will be made."

WESTERN MARYLAND.—*Equipment Notes Offered.*—The National City Company is offering $1,500,000 7 per cent equipment gold notes, preferred series. The prices yield from 6.75 per cent to 7 per cent, according to maturity. The certificates are dated March 1, 1921. There is due $100,000 annually each March 1, 1922 to 1936, inclusive.

Dividends Declared

Cincinnati, New Orleans & Texas Pacific—Preferred, 1¼ per cent, quarterly, payable March 1 to holders of record February 19.

Erie & Pittsburgh.—$.87½, quarterly, payable March 10 to holders of record February 28.

North Pennsylvania.—$1.00, quarterly, payable February 25 to holders of record February 10-February 20.

GEORGE A. GILLINGHAM, a tisket seller in the Pennsylvania station, New York City, has received a prize of $50 as the most courteous ticket seller in the city, this sum being given by the Daily News, a reporter of which paper has been going about the city to try his skill in exhausting the patience of ticket sellers, conductors, clerks in stores and other persons. Recently he gave the prize—one of which was awarded every day for a considerable time—to a conductor of the Hudson & Manhattan. Mr. Gillingham, whose portrait is printed in a circular issued by the railroad company, appears to have been prepared for all contingencies. The circular says:

The reporter posed as an uninformed and somewhat exacting, but not overly quick-witted traveler, and made a number of minute inquiries regarding rates and time-tables between New York and Kansas City. He also inquired innocently why lower berths cost more than upper ones. This information having been furnished, with the greatest cheerfulness, he requested the ticket seller to put it down in writing, which required some trouble and considerable time. Departing with the memorandum he returned, about an hour later, and shortly explained he had lost it and asked to have the same information again furnished in full and once more in writing. Mr. Gillingham, although busy, made no objection and furnished another written memorandum. The reporter then put Mr. Gillingham's patience to a further test by engaging him in a discussion over the question of accepting a check in payment for transportation from New York to Kansas City. Gillingham, when informed that he was the winner in the competition, made no comment, except to say—"By being polite I can serve twice as many passengers."

Railway Officers

Executive

W. H. Ogborn, whose election as president and general manager of the Dayton, Toledo & Chicago, with headquarters at Dayton, Ohio, was announced in the *Railway Age* of February 18 (page 440), was born at Lafayette, Ind., on September 27, 1873. He entered railway service in March, 1887, with the Lake Erie & Western, as a messenger boy in the offices of the general superintendent at Lafayette. During the next four years he served successively as messenger, yard clerk, operator and agent. In 1891, he was employed by the Wabash, on which road he served as a clerk, agent and yardmaster at various points in Indiana until 1893, when he entered the service of the Atchison, Topeka & Santa Fe in the freight department at Chicago. A year later he was employed by the Chicago, Rock Island & Pacific in the accounting department at Chicago. In 1898, he returned to the Wabash as a contracting agent with headquarters at Chicago. In 1900, Mr. Ogborn was appointed traffic manager of the Barry Steamship Company, a position which he held until 1903, when he returned to railroad service, as chief clerk and accountant to the manager of the Lehigh & Wabash Dispatch Fast Freight Line, Chicago. From 1905 to 1915, he served as general freight and passenger agent of the Illinois Southern, with headquarters first at Chicago and later at St. Louis, Mo. In the latter year he was made general manager of the St. Joseph Valley Railway, with headquarters at Elkhart, Ind. Mr. Ogborn was appointed general manager of the Dayton, Toledo & Chicago on December 15, 1920, and was serving in this position on February 7, 1921, when, with his associates, he negotiated the purchase of the railroad from the Ringling interests.

A. B. Calder, assistant general passenger agent of the Canadian Pacific with headquarters at Montreal, has been promoted to the executive staff of the company. Mr. Calder was born at London, Ontario, in 1868 and was educated at Manitoba College. He started his railway career in construction work but shortly thereafter, in 1887, entered the service of the passenger traffic department of the Canadian Pacific. For a year he was city ticket agent at Winnipeg, Man., after which he served the company at Tacoma, Wash., San Francisco, Calif., Seattle, Wash., and Chicago. At the two latter cities he was general agent. At the outbreak of the war Mr. Calder was assigned by the company to work with the British and Canadian Recruiting Mission. He returned to the company at the close of the war as assistant general passenger agent and in that capacity in 1919 conducted the tour through Canada of the Prince of Wales and his party.

A. B. Calder

Financial, Legal and Accounting

Herbert N. Paist, whose election as treasurer of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Minneapolis, Minn., was announced in the *Railway Age* of January 21 (page 263), was born on October 15, 1859, at St. Paul, Minn., and entered railway service in May, 1882, as a night operator

on the Chicago, St. Paul, Minneapolis & Omaha, at Brewster, Minn. During the succeeding year, Mr. Paist served as day operator and agent at Brewster and on May 1, 1883, he was transferred to Heron Lake, Minn., where he was employed until 1885. In that year he was transferred to Lake Crystal, Minn., and 6 years later was appointed cashier, with headquarters at Sioux City, Ia., a position which he held until 1894. On the latter date he entered the service of the Minneapolis, St. Paul & Sault Ste. Marie, serving as an agent at various points until October, 1896. At this time he was transferred to the office of the auditor, and after two years' service there, he was promoted to traveling auditor. At the time of his election as treasurer, Mr. Paist was serving as paymaster, and assistant treasurer, positions which he had held continuously since 1900.

Traffic

H. C. Montgomery has been appointed general agent on the Chicago, Indianapolis & Louisville, with headquarters at Birmingham, Ala., effective February 20, succeeding Henry Hiden, deceased.

F. E. Lewis, whose appointment as assistant general freight agent on the New York Central, with headquarters at Detroit, Mich., was announced in the *Railway Age* of January 21 (page 263), was born on March 5, 1884, at Fayette, Ohio. He entered railway service in June, 1899, as a student and extra station man on the Lake Shore & Michigan Southern at Deerfield, Mich. A year later he was transferred to Morenci, Mich., as station man and extra agent. In May, 1902, he was made agent and operator and served in this capacity at various points until 1910, when he was made soliciting freight agent and traveling freight agent, with headquarters at Toledo, Ohio. In 1911, he was appointed commercial agent with headquarters at Detroit, Mich., and after 6 years' service in this position, he was promoted to division freight agent. At the time of his recent appointment, Mr. Lewis was serving as division freight agent, with headquarters at Hillsdale, Mich., where he had been transferred in 1918.

F. E. Lewis

L. D. Gruber, traveling freight and passenger agent on the Denver & Rio Grande, has been promoted to general agent with headquarters at St. Louis, Mo., succeeding **J. L. Hohl,** who has been transferred to Chicago. Mr. Hohl succeeds **J. E. Courtney,** who has been transferred to New York, succeeding W. C. Connor, who has resigned. These promotions and changes were effective February 15.

Operating

J. B. Hersh, general yardmaster on the Baltimore & Ohio, with headquarters at Garrett, Ind., has been promoted to trainmaster, with headquarters at Willard, Ohio, and jurisdiction over the Willard terminal.

J. F. Coleman, trainmaster on the Northern Pacific, with headquarters at Tacoma, Washington, has been appointed chief despatcher, with the same headquarters, effective February 15, succeeding J. F. Thomas, who has been transferred.

J. B. MacGregor, supervisor of telegraph on the Grand Trunk, Western Lines, with headquarters at Battle Creek, Mich., has been promoted to assistant superintendent of telegraph, with the same headquarters, effective February 15.

A. O. Veitch, whose promotion to superintendent of the Olympic division of the Chicago, Milwaukee & St. Paul, with headquarters at Port Angeles, Wash., was announced in the *Railway Age* of January 7 (page 173), was born at Cambridge, Ohio, and spent the early years of his railway service with the Baltimore & Ohio. After serving successively with this road as operator, despatcher, chief despatcher and assistant trainmaster, Mr. Veitch entered the service of the Chicago, Milwaukee & St. Paul on March 1, 1912, as a train despatcher at Miles City, Mont. He was shortly promoted to chief inspector and has served in that capacity at various points on the line. At the time of his recent promotion, Mr. Veitch was serving as trainmaster on the Idaho division, with headquarters at Spokane, Wash.

Mechanical

D. G. McCormick has been appointed mechanical engineer of the Mobile & Ohio with headquarters at St. Louis, Mo.

Obituary

M. H. Smith, president of the Louisville & Nashville, died at his home in Louisville, Ky., on February 22 at the age of 85. Mr. Smith had been ill for several months.

Francis C. Donald, formerly commissioner of the Central Passenger Association, with headquarters at Chicago, whose death on February 14, at his home in Hubbard Woods, Ill., was announced in the *Railway Age* of February 18 (page 440), was born at Canfield, Ohio, and entered railway service in March, 1883, as northwestern passenger and freight agent on the Chicago & Atlantic (now a part of the Erie), with headquarters at St. Paul, Minn. In March, 1886, he was transferred to Chicago as city passenger and ticket agent and a year later was promoted to general passenger and ticket agent. When the Chicago & Atlantic was taken over by the Erie, Mr. Donald was appointed general passenger agent of the Chicago & Erie. In October, 1890, he left railroad service to become vice-chairman of the Central Traffic Association, with jurisdiction over the passenger business of the organization. He was made commissioner of the passenger department of the Association in December, 1892, and served in this position until February, 1896, when he was appointed commissioner of the Central Passenger Committee. Mr. Donald had served as commissioner of the Central Passenger Association for over 23 years, having been appointed to the position in February, 1897. In addition to his other duties he had been chairman of the Chicago Eastbound Passenger Committee since October, 1890; Commissioner of the Mileage Exchange Order Bureau of the Central Passenger Association since September, 1897; and chairman-treasurer of the Railway Ticket Protective Bureau since February 1, 1903. During the period of federal control the work of the Central Passenger Association was taken over by the Central District Passenger Committee and Mr. Donald was made secretary of this organization. When the roads were returned to private management, he returned to the reorganized Central Passenger Association and was serving in an advisory capacity at the time of his death.

F. C. Donald